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The Spectrum of Proliferation: Nuclear Options for Junior Allies

A Study on South Korea's Nuclear Ambitions

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INTRODUCTION

If South Korea were ever to "go nuclear," it would not only upend Northeast Asia's security architecture but also undermine the global nonproliferation regime. A recent Foreign Affairs article titled "Why South Korea Should Go Nuclear" underscores the urgency of reexamining Seoul's nuclear ambitions and their origins. South Korea's pursuit of an indigenous nuclear deterrent dates back to before North Korea's nuclear breakthrough in October 2006, and the debate continues to permeate both political and academic circles. As one commentator noted, "at the 70th anniversary of the Korean War Armistice, the armistice itself is at risk;"[1] amid escalating tensions and inconsistent U.S. security signals, the reliability of extended deterrence is in question, and the prospect of an independent nuclear deterrent is underway.

This dissertation addresses a twofold research question. First, it examines why—and how—junior allies in asymmetric security alliances, such as South Korea in its relationship with the United States, may consider nuclear proliferation despite being under a seemingly powerful nuclear umbrella. Second, it reconceptualizes proliferation as a spectrum that ranges from neutrality to the final development of an indigenous nuclear arsenal. Passing through nuclear planning, counter-nuclear joint military exercises, deployment of nuclear submarines and tactical nuclear weapons, a junior

[1] Veterans For Peace (VFP), "Suspend the ROK-US Military Exercises." March 2023, https://www.veteransforpeace.org/our-work/vfp-national-projects/korea-peace-campaign/suspend-annual-us-south-korea-war-drills.

ally can explore paths to proliferation within the structure of the asymmetric alliance. At the same time, it can autonomously pursue nuclear latency. The spectrum approach challenges the conventional binary understanding of nuclear proliferation and emphasizes that states have a range of strategic choices influenced by shifting alliance dynamics, threat perception, and domestic nuclear capabilities. The broader theoretical framework advanced here aims to be applicable to historical and contemporary cases, offering valuable insights for both academic scholarship and policy formulation for potential proliferation risks.

Focusing on South Korea—from its clandestine nuclear program of the 1970s to the recent resurgence of the nuclear debate—this study compares nuclear-related developments during the last three administrations of Park Geun-hye, Moon Jae-in, and Yoon Suk-yeol, to reveal how diminishing U.S. credibility and deep-seated fears of abandonment have nudged Seoul along the proliferation spectrum. By analyzing nuclear policies, defense and deterrence mechanisms, and political and public support, the dissertation identifies how South Korea has navigated the spectrum of proliferation and "played" alongside it, increasing the number and variety of its proliferation options. The analysis draws on a wealth of empirical evidence from policy documents, public opinion surveys, and expert testimonies, to illustrate how fluctuating U.S. signals, escalating external threats, and public support drive nuclear hedging behavior in junior allies among a spectrum of proliferation choices.

The dissertation is organized into three main chapters. The first lays the theoretical foundation by reviewing existing alliance and proliferation theories, emphasizing key concepts such as the alliance security dilemma, risks of abandonment and entrapment, and the limitations of extended deterrence theory. When this is perceived as unreliable, external threats and domestic support make the decision to pursue indigenous nuclear capabilities shifts from "never" to "not yet." Here, the dissertation describes the spectrum of proliferation that opens up for the junior ally.

The second chapter delves into the historical context of South Korea's covert nuclear endeavors, linking it to its later commitment to the Nuclear Non-Proliferation Treaty and broader developments in the civilian nuclear energy sector. The third chapter brings the analysis to the present by comparing the nuclear strategies of three successive and rather distinct South Korean administrations, and their interactions with U.S. policymakers for what concerns nuclear deterrence and credibility of the alliance.

By examining the interplay between alliance dynamics and practical proliferation behavior, this dissertation makes several significant contributions. First, it reassesses the role of alliances in nonproliferation, arguing that under conditions of diminished credibility, alliances may inadvertently prompt proliferation ambitions. Second, it introduces a nuanced spectrum of proliferation options—from full reliance on extended deterrence to the pursuit of nuclear latency and, eventually, outright proliferation. Third, it reveals the waning role of the NPT in effectively managing allied proliferation, emphasizing the need for renewed international attention and policy innovation. Fourth, it sheds light on the limitation of the concept of nuclear extended deterrence and on the need to build a theoretical framework capable of dealing with contemporary nonproliferation risks. Fifth, it renovates the focus on nonproliferation as a pressing global priority.[2]

[2] In compliance with the University Policy on the Ethical and Responsible Use of Generative Artificial Intelligence in Teaching and Research, ChatGPT has been utilized exclusively for non-substantive purposes, such as translation, summarization, and source organization.

METHODOLOGY

This dissertation employs a qualitative methodology combining primary and secondary sources. Primary sources include declassified defense papers, white papers, and government publications from both South Korea and the United States, declarations, press releases, and expert opinions collected through participation in conferences and direct engagement with policy discussions. As the author lived in South Korea during these debates—studying at a South Korean university during 2023 and participating in discussions at the Ministry of National Defense (MND) and the Ministry of Foreign Affairs (MOFA) as part of her internship during 2024—firsthand insights, empirical observations, and participation in the discussions have played a crucial role in shaping the analysis.

In addition, the study draws on extensive secondary data from academic publications in the field of alliance politics and nonproliferation, books, and survey data produced by leading South Korean research institutions, such as the Asan Institute and the Korea Institute for National Unification. These sources have been instrumental in constructing the theoretical framework, particularly through the breakthrough works of Alexander Lanoszka and of Vipin Narang. Content analysis of policy documents and opinions of experts in the field further bolster the empirical findings, ensuring an interdisciplinary approach that integrates international relations theory, security studies, and area studies.

CHAPTER I

BETWEEN DETERRENCE AND AUTONOMY: THEORETICAL FOUNDATIONS AND THE SPECTRUM OF NUCLEAR PROLIFERATION IN ASYMMETRIC ALLIANCES

1.1. Literature Review

The question driving this dissertation is twofold: first, it asks why a country within a security alliance—particularly a junior ally benefiting from a senior ally's extended deterrence—might nonetheless consider pursuing nuclear capabilities; second, it examines the spectrum of nuclear options available to such a junior ally within an asymmetric alliance structure, ranging from nuclear sharing arrangements to nuclear latency, as potential steps toward proliferation. This approach moves beyond viewing proliferation as a binary outcome and instead conceptualizes it as a continuum of strategic choices that a junior ally may navigate in response to shifting security concerns and alliance dynamics.

This issue partly challenges the assumption that membership in an alliance with a powerful and recognized nuclear-armed state should avert the need for an independent nuclear deterrent. Empirical examples, most notably the case of South Korea in its alliance with the United States, reveal that this logic does not always hold. Although the Republic of Korea (ROK) has been under the U.S. nuclear umbrella for at least seventy years since the signing of the Mutual Defense Treaty on October 1,

1953,[3] discussions or attempts to develop indigenous nuclear capabilities have periodically surfaced.[4] This raises the question of whether alliance dynamics act as a prompt or deterrent to proliferation decisions and whether these intersect with broader strategic considerations.

Thus, the thesis deals with asymmetric alliances, in which A and B ally because they are threatened by C, but A (the senior ally) is capable of countering C on its own, whereas B (the junior ally) needs A's cooperation to counter C.[5] Understanding these alliance and proliferation dynamics requires, first, outlining a trajectory of alliance formation theories and, second, analyzing the mechanisms that regulate asymmetric alliances. This includes examining the concept of commitment and the main risks a junior ally might face—namely abandonment or entrapment—and the consequences these entail. The authors who have studied this delicate balance include Glenn Snyder, Robert Jervis, and James Fearon.

It appears that the causes of proliferation might derive primarily from the internal balance of the alliance and disproportionate levels of overcommitment and under-commitment, especially as external threats escalate. Potential additional factors that may contribute to proliferation decisions include threat perception, internal political structure, and the overall pursuit of status recognition. The literature review will then delve into the concept of extended deterrence and nuclear umbrella commitments in asymmetric security alliances. More contemporary approaches by Sukin, Fuhrmann, and other scholars working on extended deterrence and South Korea's proliferation considerations will also be examined. To shed light on how a

[3] USFK, Mutual Defense Treaty Between the United States and the Republic of Korea; October 1, 1953.

[4] The dissertation will analyze these discussions and attempts in detail in the Chapters I and II.

[5] Matteo Dian, *The Evolution of the US-Japan Alliance. The Eagle and the Chrysanthemum* (Oxford, Chandos Publishing, 2014), 4.

junior ally might choose to proliferate, the dissertation will follow with the explanation of Vipin Narang's framework, known as Proliferation Strategy Theory, which identifies various pathways to nuclearization inside and outside an alliance.

This combination of theories on alliance dynamics and proliferation options will constitute the theoretical framework upon which the dissertation builds its argument: that within an alliance, the lack of credibility in the ally's assurances deepens demands for an indigenous nuclear alternative in the junior ally, which then considers proliferation as a security strategy. In this calculation, the junior ally has multiple options, often choosing those provided by the alliance under what is known as 'nuclear sharing,' and, at the same time, developing a latent capability.

1.1.1 Foundations of Alliance Politics: A Realist Perspective

Realism has defined international politics as an anarchic space, where no overarching authority enforces laws or mediates disputes between states. In this international architecture, states, considered the primary actors, strive to survive, preserve their sovereignty, and pursue strategies that enhance their security. Since the inception of the theory, scholars have focused on conflicts, bargaining strategies, and alliances among states. Alliances are considered fundamental to countering external threats and maintaining a favorable balance of power.[6] Realists have articulated theories about power politics, the distribution of state capabilities, and the role of strategic calculation in determining when and how states form or dissolve alliances. They assume that any alliance or security cooperation among states is not permanent but contingent on shifting power balances and national interests.

[6] Stephen M. Walt, "Alliance Formation and the Balance of World Power," *International Security* 9, no. 4 (1985): 3–43.

The first realist scholars, often referred to as 'classical realists,' argued that states engage in alliances due to the intrinsic conflict present in human nature and the pursuit of power that stems from it. They emphasize the competitive nature of international relations, where the central objective of any state is survival.[7] States form alliances when they perceive security benefits, particularly when facing a common threat.

Hans Morgenthau stressed that national interest, and therefore a state's power aspiration, is the primary driver of alliance formation.[8] Alliances are thus instruments of power politics, and their formation is a rational choice motivated by necessity, chance, or fear in an anarchic system where states lack reliable assurances of protection from any central authority. "Nations combine their power through alliances so that each may rely upon the strength of the others to supplement what is lacking in its own."[9] Weaker or smaller allies seek external guarantees to compensate for their limited security capabilities, since alliances increase a country's defense, and should, in theory, reduce the need for independent military nuclear arsenals.

In 1979, Kenneth Waltz provided a structural explanation for alliance formation in *Theory of International Politics*. He argued that the anarchic structure of the international system compels states to act in ways that maximize their security.[10] Thus, states form alliances in response to the distribution of power in the international system,

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[7] Joseph Grieco, G. John Ikenberry, and Michael Mastanduno, *Introduction to International Relations: Perspectives, Connections, and Enduring Questions*, 2nd ed. (New York: Macmillan, 2019), 278.

[8] Hans Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, 5th ed. (New York: Alfred A. Knopf, 1978), 29–31.

[9] Ibid, 195.

[10] Kenneth N. Waltz, *Theory of International Politics* (Long Grove: Waveland Press, 1979), 91-96.

which can be unipolar, bipolar, or multipolar.[11] According to Waltz's theory, alliances respond to the international balance of power and may shift based on external threats that might require balancing against at any given time to maintain the equilibrium and prevent a single country from becoming too powerful.[12]

On alliance politics, one of the most significant contributions has been that of Thomas Schelling in his seminal books *The Strategy of Conflict* (1960) and *Arms and Influence* (1966). Schelling is the first author to introduce strategic realism, incorporating game-theoretical models to explain state behavior in alliances. The scholar argued that alliances serve as deterrents against adversaries and as signaling mechanisms among states. Through signaling, states convey their commitment to allies and adversaries, reinforcing deterrence and strategic interactions of states.[13]

Schelling explained that signaling is mostly achieved through voluntary acts of commitment, where states project clear intentions, adopt them if necessary, and persuasively communicate them to shape how others act and perceive threats.[14] He further suggested that alliances are not only tools for balancing threats, as Waltz posited, but also serve a fundamental role in signaling a country's intentions within the alliance and toward adversaries. Schelling admits that the act of signaling itself could

[11] The different ways of capabilities' distribution among the system of states, or units, is described by Waltz in Chapter 7 of *Theory of International Politic*s, where the scholar asserts that he "showed why smaller is better," entailing that a bipolar world is stabler than a multipolar one. In Chapter 8, Waltz provides the theoretical rationale behind his preference for bipolarity.

[12] Waltz, *Theory of International Politics*, 168.

[13] Matteo Dian, "Thomas Schelling: Game Theory, Deterrence and Strategic Behaviour," in: Filippo Andreatta, *Classic Works in International Relations* (Bologna, Il Mulino, 2017), pp. 83-104.

[14] Thomas C. Schelling, *Arms and Influence* (New Haven and London: Yale University Press, 1966), 35-76.

be subtler: a patron country can voluntarily surrender strategies that it would find preferable for other potential options, first, to signal the level of its intention, but mostly to 'force itself' to adopt such unfavorable strategies.[15] In this sense, signaling works as both an external and internal means of coercion and deterrence.

Strategic moves by states that include communication in negotiations, declaratory policies, but also limited military engagement, are considered signals for both allies and enemies. Occasionally, the act of signaling and commitment can work in the absence of direct communication, as Dian explains it, "in most strategic interactions the players will recognize a focal point or a natural point of encounter that will allow them to find a compromise even without being able to communicate."[16]

Thus, clear commitments are everything in asymmetric alliance agreements, as they are the material realization of an ally's intentions, whether they are substantive or not. In strategic interactions among states, commitments often determine the success of both deterrence and coercion, and they have a crucial influence on effective bargaining. The decision to join or withdraw from an alliance represents a country's most powerful leverage in negotiations. In the realm of bargaining, a state can use deterrence, which is the act to "turn aside or discourage through fear; hence, to prevent from action by fear of consequence"[17] or exert coercion on others through the threat or actual use of force.[18] This will prove to be a fundamental starting point for the next formulations of alliance dynamics by Snyder and Jervis.

Schelling's work on alliance theory has been foundational in understanding the strategic behavior of allied states when confronted with specific circumstances.

[15] Ibid, 44.

[16] Matteo Dian, "Thomas Schelling," 90.

[17] Schelling, *Arms and Influence*, 41.

[18] Matteo Dian, "Thomas Schelling," 95.

However, history does not leave even the best-formulated theories unscathed. Indeed, if applied to specific cases, such as South Korea's pursuit of an independent nuclear deterrent despite explicit security assurances from the United States, the evidence suggests that there might be other factors influencing alliance dynamics and proliferation decisions.

1.1.2 Alliance Commitment and the Risks of Abandonment and Entrapment

Snyder, Jervis, and Fearon each contributed to understanding the complex dynamics of commitment, abandonment, and entrapment within alliances. Beyond purely understanding why states form alliances, they have delved into exploring whether such alliances are influenced by the choices states make in selecting their partners and the circumstances of threat that may underpin these decisions. At the same time, other academics have directed attention to the intrinsic challenges of alliance agreements, particularly the trade-off they require: a state must relinquish a degree of its independence to secure greater protection. This trade-off, however, creates a delicate balance that demands careful management to preserve the alliance without compromising the autonomy of its members. Theories of commitment, abandonment, and entrapment are not merely concerns over conventional security but become particularly acute in the realm of nuclear proliferation, where the costs of miscalculation are existential.

Stephen Walt argues that alliances are primarily driven by the need to balance against perceived threats, not just power. These threats are mostly understood in a country's aggregate power, i.e. its resources, in terms of population and economic capacity, geographical proximity, where closer states pose relatively more threats than farther ones, aggregate offensive and military capabilities, and whether the intentions or perceived interests are belligerent or peaceful.[19] Threat perception thus can inform

[19] Walt, "Alliance Formation," 8-12.

whether a country decides or not to ally with another, which one it will choose, and which strategy between external and internal balancing.

Walt emphasizes that alliances are formed not simply in response to objective threats but in response to states' perceptions of those threats, thus creating space for misunderstanding and misjudgment of a country's behavior. When a country decides to ally using external balancing, it can do so by choosing between balancing and band-wagoning, which are not determined solely by the balance of power but more so by the balance of threats: "rather than allying in response to power alone, it is more accurate to say that states will ally with or against the most *threatening* power."[20] For South Korea, the process of allying with the United States was almost mandatory since the beginning of its history as a new country: at the time of the Korean War, the factions in the South guided by the then first Korean President Rhee Syngman were counting on the support of the U.S. as the only way to countering the threat posed by the North militarily supported by the PRC. The perception of threat, and the frightening possibility of Kim Il-sung's army conquering the whole Peninsula in 1950 made the U.S. a more than welcomed ally.[21]

Glenn Snyder was the first to apply the idea of the security dilemma, usually employed to interstate adversarial relations, to the forces at interplay within alliance agreements, calling it one of the three subgames of international security. Snyder sharply defined the strategic considerations states adopt before entering an alliance, and inherent tensions they might face dividing the analysis in two times, in a sequential

[20] Ibid, 8.

[21] During Phase 1 (June to September 1950) of the Korean War, the Korean North Korean People's Army (NKPA) managed to compel United Nations Command (UNC) and South Korean forces to a small defensive perimeter around the city of Busan. In Wilson Center Digital Archive, "Korean War, 1950-1953," accessed February 5, 2025, https://digitalarchive.wilsoncenter.org/topics/korean-war-1950-1953.

game where the second is dependent on the outcome of the first. The primary alliance dilemma occurs when states proceed to ally in a system considered multipolar; secondly, when alliances have formed, the system is theoretically considered divided into two blocs (bipolar), and it is where the secondary alliance dilemma is triggered.[22] Although common interests should provide the groundwork for alliance effective maintenance, ideological differences and perception of threats do not align invariably, and can lead to rising tensions within the alliance.

Building on these concepts and on Schelling's application of game-theoretic models to realist theories, Snyder explained the choice of joining an alliance as a classic game with four possible results, where states can either ally or abstain. He asserted that "each state has two principal aims in the bargaining [in the process of forming an alliance]: to be in the most powerful coalition, and to maximize its share of the alliance's net benefits."[23] During the second phase of the alliance dilemma, states are faced with having to choose how committed they want to be in their new alliance and how much they would like to support the partner against adversaries, two choices that Snyder calls cooperation and defection. He described the management of an alliance as a bargaining process, whose outcome is mainly defined by degrees of commitment and determination, and the ultimate ability to pressure an ally into cooperation. Alliances then must continuously negotiate between the double fear of abandonment and entrapment, which are "ever-present."[24]

Snyder's alliance security dilemma highlights the inverse relationship between these risks: the stronger a senior ally's commitment, the higher the risk of entrapment, while a weaker commitment exacerbates the fear of abandonment. Where

[22] Glenn H. Snyder, "The Security Dilemma in Alliance Politics," *World Politics* 36, no. 4 (1984): 462-463.

[23] Ibid, 463.

[24] Snyder, "The Security Dilemma," 466.

the fear of abandonment is described as the concern that an ally may defect or fail to provide the expected support, especially in times of crisis. This can manifest in multiple forms, such as switching sides, withdrawing from the alliance, or disregarding its support obligations when it is most needed[25] and can lead states to make greater concessions or increase their dependence on an ally to ensure continued support.

Conversely, entrapment refers to the risk of being drawn into a conflict due to an ally's aggressive policies or commitments that one does not share. States fear that alliance obligations might compel them to support an ally in disputes or wars that are not in their national interest, thereby trapping them in unwanted conflicts. However, Kim argued that entrapment should be treated as a separate phenomenon from military entanglement, which "is a necessary component of all alliances, but states do not have to accept the risk of entrapment narrowly defined when entering alliances."[26] He argues that what Snyder has famously described as entrapment should be referred to as entanglement, defining it as "the process whereby a state is compelled to aid an ally in a costly and unprofitable enterprise *because of the alliance* (italics in the text)."[27] Entrapment, then, is only a subset that activates when a junior state within an alliance unpleasantly entangles the patron state with actions that deviate from alliance agreements and have not been agreed upon in advance.

Snyder emphasizes that states within alliances must continuously balance these twin fears and that, usually, states in alliance agreements tend to prefer a strategy of under commitment to have the upper hand, and use their commitment to negotiate in a position of power with the ally.[28] This balancing act is more complex in multipolar

[25] Ibid.

[26] Tongfi Kim, "Why Alliances Entangle But Seldom Entrap States," *Security Studies* 20, no. 3 (2011): 352.

[27] Ibid, 355.

[28] Snyder, "The Security Dilemma," 467.

systems, where multiple alliances and shifting power dynamics exacerbate the alliance security dilemma. Within the context of alliances and extended deterrence, abandonment looms especially large: a junior ally that doubts the senior partner's willingness to provide assurances for the nuclear umbrella could be motivated to develop its own deterrent.

The security dilemma within the alliance can be exacerbated by misperceptions among the allies, as Robert Jervis has analyzed. He exposed how states could interpret each other's actions and intentions, highlighting the dynamics of trust and fear that impact alliance formation and maintenance. Indeed, misperceptions can sometimes lead to the collapse of alliances. For instance, the anarchic structure of the system and the multilateral suspicion it entails hinders the ability of the allies to fully trust each other, and to rely on an ally's promises of support.[29] Being able to understand an ally, and thus its perceptions, is crucial to regulate the behavior of a country within an alliance, since "the image that a state has of its ally's intentions and capabilities will influence its own policy choices, sometimes leading to alliance commitments that are either too strong or too weak."[30] A country will regulate its levels of commitment according to subjective perceptions about potential risks of entanglement and abandonment.

Thus, alliances for Jervis are faced with the similar challenge described by Snyder, but within a psychological perspective of the ally that is often inherently vulnerable to subjectivity. Security preferences and beliefs in an ally's willingness to comply with the agreements are subject to the changes in administrations since "decision-makers act in terms of the vulnerability they feel, which can differ from the

[29] Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30, no. 2 (January 1978): 169.

[30] Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), 143.

actual situation; we must therefore examine the decision-makers' subjective security requirements."[31] At the same time, a country must manage trust to ensure the ally's cooperation while avoiding to be perceived as vulnerable, in order not to invite exploitation.[32] Jervis further explains that states predisposed to see allies as unreliable or adversaries as more threatening are likely to pursue higher security requirements, complicating alliance commitments. This reflection is important in the context of the alliance of South Korea with the U.S., as it approaches possibly the most delicate time of its existence, when "the uncertainty [North Korea's nuclear capability] generates in Seoul as to whether Washington would come to its defense in a conflict -and, in turn, Washington's refusal to tighten its commitment to Seoul- paralyzes the alliance and opens the door to miscalculations."[33] built on this by emphasizing perception and misperception, showing how shifts in rhetoric or military posture can shape alliance trust and strategic decisions.

These theoretical perspectives illustrate that alliance stability is a fragmented, negotiated process vulnerable to both external power shifts and internal political dynamics. In the next section, an analysis of extended deterrence will analyze how nuclear commitments interact with the alliance security dilemma and whether they inhibit or could, paradoxically, stimulate proliferation behavior among junior allies. Nuclear guarantees under an extended deterrence agreement should fill the strategic gap in security considerations of the junior ally, however, the effectiveness of these guarantees remains contested.

[31] Jervis, "Cooperation Under the Security Dilemma," 174.

[32] Ibid, 169-172.

[33] Robert E. Kelly and Min-hyung Kim, "Why South Korea Should Go Nuclear: The Bomb Is the Best Way to Contain the Threat From the North," *Foreign Affairs*, December 30, 2024.

1.1.3 Extended Deterrence and the Crisis of Credibility

The concept of deterrence evolved concurrently with the development of the first nuclear arsenals following World War II, serving as a foundational principle for international security strategy and strategic stability among major powers.[34] Deterrence has been defined as "the power to dissuade an adversary from initiating an attack due to the fear of the consequences,"[35] and overall is the act of influencing the adversary's choices "by making the expected consequences of an action appear intolerable or unprofitable."[36] In some cases, deterrence makes use of threats to prevent an enemy from taking actions that conflict with the deterrent state's interests, and often entails the coercive clause of military retaliation. The literature on deterrence has hitherto identified two primary types: deterrence by denial and deterrence by punishment.

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[34] In 1948, the United States published its first Policy on Atomic Warfare (in Office of The Historian, "Draft Report by the National Security Council on United States Policy on Atomic Warfare," accessed January 28, 2025), asserting that no specific weapon would be prohibited in order to enhance national security. In 1954, under Secretary of State J.F. Dulles and President D.D. Eisenhower, the doctrine of massive retaliation emerged as part of the *New Look* strategy. However, by the early 1960s, policymakers began incorporating a broader range of deterrence options beyond nuclear retaliation, leading to the development of the flexible response strategy. This approach, formally adopted in 1967 under President J.F. Kennedy as *Flexible Deterrent Options,* aimed to provide a more adaptable response to potential threats. The doctrine evolved further in the latter half of the 1970s, focusing on the prevention of large-scale attacks through a broader set of *limited nuclear options*. These were designed to not only resist aggression but also demonstrate strategic restraint, and targeted political, economic, and military infrastructure essential for post-war recovery.

[35] Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, NJ: Princeton University Press, 1961), 3.

[36] Thomas C. Schelling, *Arms and Influence*, 35.

Deterrence by denial is aimed at discouraging adversaries from initiating unwanted actions, particularly military attack, by essentially convincing them that such actions will not succeed. By decreasing the expectations of gains an adversary expects, the denial approach makes the intended action seem pointless and unattainable.[37] Deterrence by denial focuses on robust defense and credibility to prevent adversaries from even considering acting on their potential objectives of aggression. This method involves deploying sufficient military strength, enhancing defense capabilities, and implementing strategies able to counter potential attacks. By undermining an adversary's confidence in attaining their goals, deterrence by denial serves as a proactive measure to maintain security and stability.[38]

In contrast, deterrence by punishment entails threatening the adversary with penalties to dissuade military attacks. This approach involves the promise of significant retaliatory measures, such as economic sanctions and military strikes. Deterrence by punishment requires nuclear arsenal survivability and second-strike, or assured destruction capability, meaning that a country must be able to ensure that its nuclear forces can endure the adversary first-strike and still retain the capacity to deliver a successful retaliatory strike. If a country can respond effectively even after sustaining a first strike, a concept known as Mutually Assured Destruction (MAD), the adversary will be deterred from initiating a nuclear conflict and strategic stability will be reached.[39] To ensure the survivability of the arsenal measures such as hardening missile

[37] Michael J. Mazarr, *Understanding Deterrence* (Santa Monica, CA: RAND Corporation, 2018), 5, https://www.rand.org/pubs/perspectives/PE295.html.

[38] Ibid, 2.

[39] Grieco, Ikenberry, and Mastanduno, *Introduction to International Relations*, 277-278.

silos, deploying mobile missile launchers, and maintaining submarine-based nuclear forces are fundamental.[40]

The policy of *extended* deterrence was born at the beginning of the Cold War out of the threat posed by the Soviet Union to Western Europe, which was allied with the U.S. To deter potential USSR expansion, the U.S. built the framework of extended nuclear deterrence abroad, creating the North Atlantic Treaty Organization (NATO) as a collective defense agreement in 1949, and forward-deploying nuclear forces on Western European territory. U.S. extended deterrence was subsequently extended further in the Pacific to counter the influence of the PRC and the DPRK. Countries such as Japan, Australia, and South Korea were placed under the U.S. nuclear umbrella, and tactical nuclear weapons (TNW) were stationed on South Korean territory until 1991, but not in a NATO-style nuclear-sharing arrangement.[41]

Traditional deterrence theory argues that when a senior ally's nuclear umbrella is perceived as credible, security assurances should be sufficient for the junior state, thereby reducing its incentives to pursue an independent nuclear capability. This argument is supported by scholars such as Jo and Gartzke,[42] Sagan,[43] and Singh and

[40] U.S. Department of Defense, "Chapter 1: Overview of The U.S. Nuclear Deterrent," in *The Nuclear Weapons Handbook 2020 [Revised]*, accessed January 24, 2025, https://www.acq.osd.mil/ncbdp/nm/NMHB2020rev/chapters/chapter1.html.

[41] Jennifer Bradley, "Preventing the Nuclear Jungle: Extended Deterrence, Assurance, and Nonproliferation," *Joint Force Quarterly* 112 (1st Quarter 2024), 71.

[42] Dong-Joon Jo and Erik Gartzke, "Determinants of Nuclear Weapons Proliferation," *Journal of Conflict Resolution*, 51, no. 1 (2007): 170.

[43] Scott D. Sagan, "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security* 21, no. 3 (1996-1997): 86.

Monteiro,[44] who contend that credible security guarantees can serve as effective substitutes for the development of indigenous nuclear programs. And, thus, for the prevention of nuclear proliferation.

As extended deterrence comes into play, the credibility of nuclear guarantees becomes a decisive factor in alliance security: especially when a senior ally fails to credibly signal its commitment to defending its junior partner. For instance, even slight shifts in rhetoric, military and nuclear posture can become potential concerns in the eyes of a junior ally, affecting its strategic decision-making and potentially fueling proliferation considerations. However, as Morrow argues, formal alliance treaties alone do not guarantee reliability, since credibility is shaped by broader reputational costs, domestic constraints, and shifting strategic priorities.[45]

The evolution of deterrence theory can be understood through three distinct scholarly waves. The first wave, spanning from the 1960s to the 1980s, was led by Schelling, Snyder, and Jervis, and focused on resolve and credibility, arguing that the past behavior of a state influences its future deterrent capacity. The second wave, from the late 1990s to the 2000s, contested this notion, asserting that credibility is assessed based on contemporary strategic interests and material capabilities rather than historical precedents. The third and contemporary wave, that will be analyzed in the following paragraphs, seeks to integrate the two perspectives, and investigates reputation as contingent on relational dynamics, contextual variables, and specific

[44] Nuno P. Monteiro and Alexander Debs, "The Strategic Logic of Nuclear Proliferation" *International Security* 39, no. 2 (Fall 2014): 50.

[45] James D. Morrow, "Alliances, Credibility, and Peacetime Costs," *Journal of Conflict Resolution* 38, no. 2 (June 1994): 270-297.

actors involved.[46] This contemporary approach underscores the nuanced and situational nature of deterrence credibility and offers a variety of perspectives that include the significance of public support and resources allocation.

Following from the previous theorizations on commitment and signaling, Fearon explained that the credibility of an alliance fundamentally depends on costly signaling, where tangible commitments—such as troop deployments or nuclear sharing—assure allies and deter adversaries.[47] According to him, states communicate the credibility of their intentions and commitments in international relations through two types of costly signals, i.e. 'tying hands' and 'sinking costs.'[48] Sending costly signals can be "rendered credible when the act of sending it incurs or creates some cost that the sender would be disinclined to incur or create if he or she were in fact not willing to carry out the threat,"[49] which means that a threat needs to have somewhat of a cost attached to it to be perceived as credible. Alliances can serve as *ex post* commitments, meaning they impose reputational costs on a patron if it fails to defend its ally, while arms transfers operate as *ex ante* commitments, functioning as sunk costs that signal support without the direct commitment to military intervention.[50]

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[46] Robert Jervis, Keren Yarhi-Milo and Don Casler, "Redefining the Debate Over Reputation and Credibility in International Security: Promises and Limits of New Scholarship," *World Politics* 73, no. 1 (2021): 168.

[47] James D. Fearon, "Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs," *Journal of Conflict Resolution* 41, no. 1 (1997): 68-90.

[48] Ibid, 70.

[49] Ibid, 69.

[50] Keren Yarhi-Milo, Alexander Lanoszka, and Zack Cooper, "To Arm or to Ally? The Patron's Dilemma and the Strategic Logic of Arms Transfers and Alliances," *International Security* 41, no. 2 (2016): 90–139.

Senior allies that offer extended deterrence face a dilemma when determining how to better reassure allies while avoiding entrapment in unwanted conflicts. While stationing nuclear forces (sunk costs) was conventionally seen as the gold standard, recent work challenges its effectiveness compared to institutional and reputational signals. The decision between military aid, forward deployment, or formal reassurance of the alliance is primarily influenced by two strategic considerations: the mutuality of security interests, and the junior ally's conventional capabilities, especially if the junior ally has the ability to deter adversaries or prevail in a conflict without the need of direct intervention.[51] New studies have further expanded the analysis of credibility through the study of how domestic opinion can shape the perceived reliability of nuclear guarantees and influence proliferation sentiment.

Fuhrmann and Sechser analyze the mechanisms through which states signal their alliance commitments in the context of extended nuclear deterrence, distinguishing the two types of costly signals theorized by Fearon. They examine whether formal defense pacts and foreign nuclear deployments enhance deterrence, where the former is a hand-tying type of cost that could damage a country's reputation in the long run, and the latter are sunk-cost signals, which are considered costly in the short term but do not alter future payoffs.[52] These include deploying military forces, constructing bases, or stationing nuclear weapons on allied territory. This issue is particularly relevant to the U.S.-ROK alliance, where South Korea has increasingly questioned whether the United States would follow through on its nuclear commitments in a crisis.

[51] Yarhi-Milo, Lanoszka, and Cooper, "To Arm or to Ally," 93-99.

[52] Matthew Fuhrmann and Todd S. Sechser, "Signaling Alliance Commitments: Hand-Tying and Sunk Cost in Extended Nuclear Deterrence," *American Journal of Political Science* 58, no. 4 (2014): 919-935.

While conventionally, the majority of scholars working on extended deterrence argued that foreign-deployed nuclear weapons should provide a stronger deterrent, they can also serve as a "tripwire" in the case that the junior ally and host state is attacked, 'entrapping' the nuclear patron into an unwanted conflict.[53] Indeed, Fuhrmann and Sechser assert that stationing nuclear weapons on allied soil does not significantly enhance deterrence beyond the effects of a defense pact itself since, in the first place, the credibility of extended deterrence does not derive from physical presence but from public commitments of alliance agreements, and second, that the costs associated with foreign nuclear deployment do not necessarily translate into stronger deterrence.[54] This challenges traditional assumptions that nuclear sharing arrangements, such as the U.S. nuclear presence in Europe and previously in South Korea, substantially strengthen extended deterrence.

Fuhrmann advances his theory in a following 2018 article examining different mechanisms of extended nuclear deterrence, focusing again on the role and relative weight of formal defense pacts and foreign nuclear deployments for a junior ally's security. The core thesis is that the deployment of nuclear weapons on allied soil does not significantly strengthen deterrence and, instead, might have limited utility in preventing conflict.[55] His conclusion is particularly interesting: the credibility of deterrence is bestowed to the alliance by the reputational costs and institutional constraints, whereas nuclear deployments primarily serve the functions of reassurance and non-proliferation.[56]

[53] Fuhrmann and Sechser, "Signaling Alliance Commitments," 923.

[54] Ibid, 932.

[55] Matthew Fuhrmann, "On Extended Nuclear Deterrence," *Diplomacy & Statecraft* 29, no. 1 (2018): 64.

[56] Ibid, 65.

Indeed, it can be affirmed that, overall, states that have a security alliance architecture with a nuclear-armed country are significantly less likely to be targeted in a militarized dispute.[57] Although, whether foreign deployment is stationed on the junior ally's territory or not enhances or does not provide additional value to extended deterrence is still a disputed argument. And it remains to be understood whether moral considerations actually fall into alliance considerations, and whether the 'terrible' reputational costs Fuhrmann describes are indeed costly or can be superseded by a strong ally, for example by the U.S.

Fuhrmann's findings suggest that policymakers should focus on strengthening alliance commitments through institutional and political mechanisms rather than relying on forward-deployed nuclear weapons as a primary means of deterrence, however, this assumption is also contested. In fact, with the '*unwanted use theory*,' Sukin argues that, counterintuitively, high-credibility nuclear security guarantees can increase public support for nuclear proliferation in the junior ally.[58] This happens because a highly credible guarantee may raise fears that the nuclear patron will miscalculate or escalate a conflict unnecessarily, leading citizens of the junior state to support proliferation as a means of regaining control over their own security. In the case that the senior ally is perceived as too eager to use nuclear weapons in times of crisis, citizens may fear entrapment in an unwanted nuclear conflict.[59]

Sukin empirically tests the theory through surveys conducted in South Korea, finding that when respondents perceive U.S. nuclear commitments as highly credible,

[57] Fuhrmann and Sechser, "Signaling Alliance Commitments."

[58] Lauren Sukin, "Credible Nuclear Security Commitments Can Backfire: Explaining Domestic Support for Nuclear Weapons Acquisition in South Korea," *Journal of Conflict Resolution* 64, no. 6 (2020): 1012.

[59] Ibid, 1016.

support for nuclear proliferation increases rather than decreases.[60] This finding suggests that the effectiveness of extended deterrence may not be as straightforward as previously assumed and that domestic political pressures may drive proliferation even under robust alliance commitments, challenging the literature regarding nuclear security guarantees and their role in preventing nuclear proliferation. The answer to the proliferation puzzle becomes even subtler, as it seems that declaratory extended deterrence does prevent conflict to a certain extent, but fails to provide complete assurance, and in the case presented by Sukin, it can also lead to further consideration of an independent nuclear arsenal.

For instance, the role of public support or criticism for extended nuclear deterrence appears to be more far-reaching than previously argued. A study conducted in the U.S., Japan, and South Korea demonstrates that public backing for extended nuclear deterrence in these countries is much weaker than generally upheld, even if scenarios of nuclear attack by North Korea are contemplated.[61] However, the rate of approval for nuclear retaliation is not exactly the same as supporting an indigenous nuclear program, and the preference to solve disputes through diplomatic negotiations or conventional military responses is conventional wisdom. Interestingly enough, the public that proved to be more reluctant towards nuclear retaliation was the U.S. one, exhibiting a preference for national interests over alliance obligations, and raising serious concerns about the credibility of Washington's nuclear assurances to allies. The authors suggest that policymakers should not take public support for nuclear retaliation for granted, as domestic opposition could undermine deterrence credibility in junior allies.

[60] Ibid, 1038.

[61] David M. Allison, Stephen Herzog, and Jiyoung Ko, "Under the Umbrella: Nuclear Crises, Extended Deterrence, and Public Opinion," Journal *of Conflict Resolution* 0, no. 0 (2022): 1-31.

Accordingly, credibility can be shaped not only by military capabilities and by public support, but also by the broader reputation of the senior country as a *reliable* ally. For what concerns the U.S. nuclear umbrella. Henry argues that alliances' interdependence exists and that junior allies value commitment of the senior ally in areas where their strategic interests collide and accept that the senior may act in a disloyal manner with another ally if this coincides with the interests described before.[62] The scholar shows that allies evaluate their patrons' credibility through a nuanced lens, factoring in their own strategic priorities and the broader context of alliance politics. However, if the senior ally fails to uphold commitments to another ally, which are also considered strategic for the junior ally, it severely weakens trust in extended security guarantees.[63] For allies, the credibility of extended deterrence is judged on whether the senior ally showed constant levels of commitment to their specific region. This is particularly relevant in U.S. security commitments to South Korea, where concerns over extended deterrence remain a central issue.

However, U.S. extended deterrence commitments in one region can deeply affect how allies in another region perceive the alliance with the patron. While strong U.S. engagement in one region can enhance its reputation globally, it can also create anxiety among allies in other regions, as they fear they may become a lower priority in Washington's strategic planning.[64] Alliance interdependence is a significant influence on extended deterrence. Precisely, junior allies have to consider two contrasting desires: on one hand, they wish for U.S. extended deterrence credibility at the

[62] Iain D. Henry, "What Allies Want: Reconsidering Loyalty, Reliability, and Alliance Interdependence," *International Security* 44, no. 4 (2020): 47.

[63] Ibid.

[64] Tongfi Kim and Luis Simón, "A Reputation versus Prioritization Trade-Off: Unpacking Allied Perceptions of US Extended Deterrence in Distant Regions," *Security Studies* 30, no. 5 (2021): 725–760.

international level, and, on the other hand, they wish their region's security to be prioritized over the others.[65] This is what Kim and Simón call the reputation versus prioritization dilemma, where allies are reassured by U.S. global credibility, but at the same time worry about deterrence resource allocation. Prioritization is particularly triggered by the perception of rising external threats and the patron's resource scarcity.

In times of crisis, any action that might lead the junior ally to perceive that the senior ally could be unwilling or unable to fulfill its obligations might decrease extended deterrence's credibility. Sukin and Lanoszka investigate how US allies perceive different reassurance strategies in these crucial moments among military deployments (costly signals), diplomatic summitry, economic sanctions, and public reaffirmations of security guarantees. Focusing on five central-Eastern European States that are all NATO members, they find that the public in these countries prefers economic sanctions and public reaffirmations of security commitments as these are strategies that reduce the risk of escalation.[66] However, as it will be expanded in the following chapters, this might not be the case for other U.S. allies that do not enjoy NATO membership, such as South Korea.

1.1.4 Beyond the Nuclear Umbrella: The Drive for Independent Deterrence

The debate over extended deterrence is thus mainly focused on credibility of the commitment, to whom scholars have given various explanations and perspectives. Yarhi-Milo and Jervis try to highlight the role of perception and psychological factors in shaping how states assess the credibility of both their adversaries and allies.[67] Their argument is that reputation is not a static characteristic of states but a dynamic and

[65] Ibid.

[66] Lauren Sukin and Alexander Lanoszka, "Credibility in Crises: How Patrons Reassure Their Allies," *International Studies Quarterly* 68, (2024): 1-14.

[67] Jervis, Yarhi-Milo and Casler, "Redefining the Debate," 191-192.

relational phenomenon—it is shaped not only by past actions but also by how those actions are perceived and interpreted by other states.[68] Reputation can be perceived differently depending on the observer, and is cross-dimensional covering willingness to fight, military effectiveness, honesty, and behavioral consistency of the senior ally. Thus, effects on deterrence credibility are contextual and must be examined within the dynamics of a specific case.

While much of the literature on deterrence credibility has focused on the mechanisms through which alliances signal their commitments, an equally important dimension is how these commitments interact with the proliferation decisions of junior allies. If deterrence credibility is perceived as weak, the theory agrees that it can incentivize nuclear proliferation as the junior ally seeks greater self-reliance. However, as recent research suggests, even highly credible security guarantees do not necessarily suppress proliferation ambitions and may, under certain conditions, exacerbate them. The focus, therefore, should not be solely on how to enhance the credibility of extended deterrence, but also on how this interacts with domestic pressures and strategic incentives that drive proliferation within the junior ally.

This reframing of the debate makes the challenge of extended deterrence even more complex. Not only must the senior partner ensure that its alliance commitments are perceived as credible by both allies and adversaries, but it must also carefully calibrate its signals to prevent unintended consequences—such as emboldening the junior ally's nuclear aspirations. If deterrence credibility is derived primarily from institutional constraints and reputational costs, rather than physical deployments, then policymakers must consider whether forward-deployed forces or declaratory commitments serve as the more effective tool in preventing proliferation or not. The case of South Korea, which has sought the redeployment of U.S. tactical nuclear

[68] Ibid, 191.

weapons (TNWs) despite Washington's assurances, suggests that perceptions of alliance credibility alone are insufficient—what ultimately matters is whether the junior ally believes that its specific security concerns are prioritized within the broader strategic framework of the alliance.

Building on the foundation that alliances, particularly asymmetric ones, operate within a persistent tension between abandonment and entrapment, and acknowledging that extended deterrence relies on both perceived credibility and consistent signaling, junior allies may still explore proliferation options. Consequently, the literature on the causes of proliferation by junior allies has formulated the following three hypotheses:

(H1) Proliferation is the result of threat perception

Meaning that proliferation consideration and decision by a junior ally within a regime of extended deterrence are motivated by the perception of an intensifying external threat that negatively affects the security of the junior ally much more than the security of the senior ally. Also referred to as the "adversary thesis," this hypothesis argues that the external security threat posed by an adversary is the primary driver of proliferation, notwithstanding the role of the state's allies or security patrons.[69] The likelihood of a country's nuclear pursuit increases and decreases in a way that is directly proportional with the escalation and de-escalation of the perceived threat.[70] The adversary thesis assumes that states react primarily to the conduct of their adversaries rather than the credibility of the security assurances provided by the alliance extended deterrence.

[69] Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Ithaca, NY: Cornell University Press, 2018), 23.

[70] Ibid.

If adversary threats alone determined proliferation, then fluctuations in U.S. security commitments should not significantly impact nuclear ambitions of its junior allies. However, as described before, uncertainty over alliance credibility often plays a crucial role in shaping nuclear behavior, suggesting that adversarial threats alone are insufficient to explain proliferation dynamics. Thus, another hypothesis is formulated:

(H2) Proliferation is the result of domestic politics

This is known as the "domestic politics thesis" and asserts that nuclear proliferation decisions are primarily driven by internal political and economic considerations rather than external threats.[71] According to this view, outward-looking regimes, which seek economic integration and legitimacy through global trade, are more likely to avoid nuclear weapons development to maintain international credibility and prevent economic sanctions. In contrast, inward-looking regimes, which prioritize self-sufficiency and nationalist legitimacy, are more likely to pursue nuclear weapons as tools of domestic political consolidation, and strategic autonomy.[72]

This hypothesis provides a valuable complementary explanation for nuclear proliferation, as it highlights how domestic political structures, and economic incentives influence strategic decisions. However, it does not fully account for why some states with similar political and economic characteristics take different nuclear paths. Domestic dynamics alone cannot explain variations in nuclear pursuit, and they must be integrated with alliance dynamics.

(H3) Proliferation is the result of status recognition

[71] Ibid, 24.

[72] This is the model proposed by Etel Solingen in the book *Nuclear Logics: Contrasting Paths in East Asia and the Middle East*, as explained by Lanoszka in *Atomic Assurances*.

When a junior ally seeks to elevate its international standing through nuclear capabilities, the likelihood of pursuing an independent nuclear deterrent increase. Also known as the "prestige thesis," it argues that nuclear proliferation is not solely a rational security or political decision but is also driven by the symbolic and status-enhancing value of nuclear weapons. This is a constructivist explanation for nuclear decision-making that focuses on the idea of nuclear weapons as the ultimate proof of a country's status in the international system.[73] Countries with leaders that have high threat perceptions are more likely to pursue nuclear weapons as an end in itself rather than as a means to deterrence.

This argument is particularly relevant for understanding why some states with minimal security threats still seek nuclear weapons, while others with significant external threats abstain. However, the prestige thesis does not sufficiently explain why nuclear ambitions fluctuate over time within the same state, nor does it clarify how external pressures interact with domestic perceptions of prestige. Indeed, leaders' perceptions of security guarantees and alliance credibility can shape how prestige concerns factor into nuclear decisions: if a leader perceives the alliance to be uncertain, the symbolic value of nuclear weapons as a marker of international prestige might increase.[74]

As Lanoszka asserts, these alternative explanations for nuclear proliferation are not necessarily wrong in themselves, instead, they offer insightful perspectives on the conditions under which states may seek or abandon nuclear weapons. Indeed, the

[73] See Jacques E. C. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and State Behavior*, NY: Cambridge University Press, 2006, 1-46, and Edward Howell, *North Korea and the Global Nuclear Order* (Oxford: Oxford University Press, 2023), 56-59.

[74] Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Ithaca, NY: Cornell University Press, 2018), 23.

scholar tests these theories as complementary explanations in what he formulates as his own hypothesis:

(H4) Proliferation is the result of fear of abandonment by the senior ally

When the senior ally's assurances are not enough and the junior ally begins to fear abandonment, it can consider providing for its own security with an independent nuclear option. Lanoszka's argument is that alliances may be more effective in deterring nuclear proliferation than in reversing it once initiated, suggesting that the real challenge for senior allies is not just demonstrating commitment, but ensuring that extended deterrence does not itself become a driver of proliferation.[75]

Lanoszka challenges the prevailing belief that alliances deter nuclear proliferation, instead, they can contribute to proliferation considerations influencing the junior ally's decision to pursue or abandon nuclear weapons.[76] His framework is built upon five propositions: 1) military alliances might not prevent nuclear proliferation by allies as effectively as widely accepted; 2) in-theater conventional forces are critical to making nuclear umbrella guarantees credible; 3) U.S. coercion of allies that pursued or attempted to pursue nuclear weapons has played a smaller role than conventionally believed; 4) economic and technological dependency on the U.S. are more effective tools for reversing nuclear programs than anything else; and, 5) deterring an ally from initiating a nuclear program is easier than compelling it to terminate one.[77]

Although he focuses on the role of alliances in shaping proliferation behavior, he does not claim that alliances are the only factor influencing these decisions. Rather, the framework provides a more comprehensive account of how strategic, political, and

[75] Ibid, 11-12.
[76] Ibid.
[77] Ibid, 10.

ideational motives interact with alliance stability behind nuclear proliferation decisions in junior allies. While external threats, domestic politics, and status recognition alone cannot explain but a part of states' decision to pursue nuclear weapons, the integration of these with consideration about the broader context of alliance breakouts proves to be a foundational determinant. In the cases investigated by the author, such as Japan, West Germany, and South Korea, proliferation-related behavior has been observed coinciding with rising fear of abandonment within the junior allies.[78]

Arguably, the dissertation holds that the most consequential driver for a junior ally's proliferation tendencies is the fear of abandonment, whereas the junior ally worries that the senior partner could either withdraw from the region or prove unwilling to use nuclear weapons on the ally's behalf. Building on the above factors, this dissertation contends that *fear of abandonment* tends to overshadow other motives, especially in alliances where the security guarantor is geographically distant, as in the case of the United States and the Korean Peninsula. If signals from the senior ally suggest inconsistency or a shifting strategic focus, the junior ally's anxiety escalates, often revisiting the notion of nonproliferation.

1.1.5 Vipin Narang's Proliferation Strategies Theory

Having established that fear of abandonment is a critical driver of nuclear proliferation among junior allies, the next step is to examine how states translate this fear into concrete proliferation behavior. This dissertation considers proliferation behavior, considerations, nuclear development and pursuit as interchangeable synonyms indicating "the period during which the state is either exploring or pursuing nuclear weapons." Nuclear "exploration" involves the "political authorization to explore the [nuclear] option" or "linking research to defense agencies that would oversee any potential weapons development." Nuclear "pursuit," in turn, involves

[78] Ibid, see Chapter 3 for West Germany, Chapter 4 for Japan, and Chapter 5 for South Korea.

"political decision by cabinet-level officials, movement toward weaponization, or development of single-use, dedicated technology."[79]

Recognizing the potential need for an independent nuclear capability does not automatically translate into the pursuit of nuclear weapons; rather, states can adopt distinct proliferation strategies according to their strategic environment, resource availability, and alliance constraints. While much of the existing literature has examined why junior allies might consider nuclear weapons, this dissertation represents the first attempt to systematically integrate Narang's typology with the broader alliance politics framework. By linking the conditions that generate proliferation pressures to the specific strategies states adopt, this approach provides a more comprehensive understanding of how junior allies navigate the tension between alliance dependence and nuclear self-sufficiency.

Among the most comprehensive accounts of strategic proliferation choices, "Seeking the Bomb: Strategies of Nuclear Proliferation" by Narang constitutes a key conceptual element for the development of the research question. As the author contends, the way in which countries decide to pursue nuclear weapon development, i.e. their 'strategy of proliferation', indicates the nuclear aspirants' logic and has "important consequences for nuclear proliferation and conflict."[80] A country that chooses a strategy of proliferation instead of another has considered the different likelihood of success and the vulnerabilities that that choice entails, according to its geographic position, economic strength, international stance, and most of all, whether it prioritizes speed of development and attainment or secretness. To understand why a

[79] Monteiro and Debs, "The Strategic Logic of Nuclear Proliferation," 11.

[80] Vipin Narang, *Seeking the Bomb: Strategies of Nuclear Proliferation*, (Princeton: Princeton University Press, 2022), 2.

country chooses a particular proliferation strategy over the other alternatives is what Narang calls Proliferation Strategy Theory (PST).[81]

The most critical moment for a possible proliferator, when it undergoes progressively more pressure and thus needs to consider its proliferation strategy, is when the point of nuclear weaponization is close.[82] This could be due to the increased levels of constraints, fear of being attacked by other countries when the program is yet not advanced, or overestimation and over-reliability on the newly born program.

In the book, Narang manages to channel the various logics used by states that would like to proliferate into four proliferation strategies that determine their choices and probability of success. He defines the different proliferation strategies as hedging, sprinting, sheltered pursuit, and hiding.[83] In this context, it is vital to understand that, to a certain extent, all non-nuclear weapon states (NNWS) are possible proliferators, and no country can be considered neutral or to have renounced nuclear proliferation altogether. Narang frames the question of proliferation in terms of when and how: thus, a NNWS is only a state that has chosen not to proliferate yet.[84] Countries are then divided into the proliferation strategy that they choose to attain a nuclear weapons program.

The first kind of proliferation described is hedging, which is composed of six strategies divided into three different types of hedging, and three active weaponization strategies. Hedging is defined as "a strategy to develop a bomb option, laying the

[81] Ibid, 27.

[82] Ibid, 9.

[83] Ibid, 3.

[84] "Some states choose to hedge on their potential path to obtaining nuclear weapons, seeking not the rapid development of a nuclear [...] capability but rather to put the pieces in place to weaponize at a later date, if necessary," in Narang, *Seeking the Bomb*, 3.

groundwork for weaponization in the future under some set of strategic conditions"[85] and can be divided into technical, insurance, and hard hedging. While it could be misunderstood as the well-renowned concept of 'nuclear latency,'[86] Narang explains that technical hedging stems from an *intentional, political* decision to pursue nuclear capabilities without actually embarking in the development of a nuclear device. States that adopt technical hedging momentarily lack the intent to pursue further nuclear weapons development but might do so when the conditions are met as a "by-product of a civilian energy program."[87]

Instead, insurance hedging entails both material steps to simplify the process to acquire nuclear weapons and to menace its acquisition if necessary. The last kind of states, called hard hedgers, seek to become a threshold nuclear state,[88] with most of the components for a functional weapons program, such as technical knowledge, weapons-grade fissile material, and nuclear bureaucracy, already in place. To understand the difference between the various kinds of hedging is of utmost importance, since the choice "provides insights into what might trigger a shift to an active weaponization strategy."[89] This is particularly the case of changes in alliance commitment, as in the

[85] Ibid, 17.

[86] A separate paragraph will be dedicated to nuclear latency in Chapter 1. For now, nuclear latency shall be defined as "the possession of many or all of the technologies, facilities, materials, expertise (including tacit knowledge), resources and other capabilities necessary for the development of nuclear weapons, without full operational weaponization." In Wilson Center "Exploring Nuclear Latency," accessed January 29, 2025, https://www.wilsoncenter.org/publication/exploring-nuclear-latency.

[87] Narang, *Seeking the Bomb*, 17.

[88] A threshold nuclear state is a nation that possesses significant technological capability and weapons-grade fissile material to develop nuclear weapons but has exercised restraint for the time being.

[89] Narang, *Seeking the Bomb*, 20.

current dissertation analysis, when a hedger could ultimately decide to reverse its decisions and pursue a nuclear weapons program.

The second strategy analyzed is defined as 'sprinting,' and it has long been considered as the conventional and most widely adopted approach for countries that wish to become nuclear weapon states. As the name suggests, sprinting is the most direct and rapid pathway to nuclear weaponization, in which a state openly and boldly develops its nuclear capability in the shortest possible time frame, in order to avoid the window of vulnerability.[90] This strategy involves explicitly military-focused uranium enrichment or plutonium reprocessing, the development of delivery vehicles, and the creation of organizational routines for nuclear command and control (C2). Historical cases of 'sprinters' are considered the Soviet Union, France, and the PRC, which pursued nuclear weapons in a time where counterproliferation efforts were minimal and the costs or possibility for external intervention relatively low.

With the creation of the Non-Proliferation Regime in 1968, adopting sprinting as a strategy to proliferate is almost unachievable. However, countries might choose a third strategy, called 'sheltered pursuit,' developing a nuclear arsenal under the political and security cover of a powerful partner or ally that is either complicit in or tolerant of its efforts.[91] In such, the protection of the senior partner deters preventive attacks and allows the proliferator to progress, decreasing the window of vulnerability. This case history includes Israel and Pakistan, under laissez-faire policy of the U.S, and later North Korea, under the PRC's protection. The sheltered pursuit has proven to be highly successful since it reduces the likelihood of preemptive military action, however, it remains contingent on major power's strategic interests.

[90] Ibid.

[91] Ibid, 22.

The last strategy described by Narang is the riskiest one: hiding. This is a clandestine approach in which states wishing to acquire nuclear capabilities prioritize secrecy over speed, in order to avoid detection and subsequent external intervention.[92] The objective guiding this strategy is to avoid any kind of preventive action and present the world with a *fait accompli* once the nuclear program has reached a stage that allows for it.[93] States that choose hiding will typically employ underground facilities and will hide their uranium enriching or plutonium reprocessing capabilities in an attempt to circumvent international monitoring mechanisms.[94] This was the case of Iraq, Syria, Taiwan, and also South Korea during the 1970s.

Narang's framework demonstrates that states do not pursue nuclear weapons in a uniform manner. Their choice of strategy depends on external constraints, domestic political cohesion, and the risk of military intervention. While sprinting is effective for powerful states, most modern proliferators must rely on either sheltered pursuit or hiding to evade external pressure. Understanding these distinct pathways helps predict how future nuclear aspirants will navigate their proliferation efforts and how major powers might respond.

The PST then is used to formulate predictions on possible proliferators' choices and demonstrates that "there is little relationship between the motivations for nuclear pursuit and a state's ultimate choice of proliferation strategy."[95] This is a clear contradiction, and relevant contribution, to both the 'adversary' and the 'prestige' arguments theorized by realist and constructivist scholars respectively. The source of demand for proliferation, as Narang puts it, does not prove to be meaningful as much

[92] Ibid, 23.

[93] Ibid, 24.

[94] Ibid.

[95] Ibid, 7.

as its intensity.[96] This idea fundamentally reverses the logic that the proliferation theories previously described have held more or less as enshrined: it is no longer the motive that must be discerned as it upholds the how, but it is the how that must be independently considered as significant.

A subsequent observation made by Narang is that domestic political consensus has a fundamental role in the ultimate decision of a state to pursue a nuclear weapons program.[97] In fact, domestic opinion is considered in the calculations as much as international constraints, such as the Treaty on Non-Proliferation of Nuclear Weapons (NPT) and other binding treaties. This observation, although not overly explained in Narang's account, is to be a crucial indicator for the context of analysis, i.e. South Korea. As it will be discussed later on, general domestic opinion in South Korea has been overly in favor of a nuclear alternative over a period of several years, showing little to no differences among generational patterns.[98]

Narang's model helps explain why, should alliance commitments prove at least partially credible, junior allies may adopt an insurance, hard, or technical hedging strategy rather than risking diplomatic isolation and regional backlash. If, however, the alliance bond erodes significantly, the junior ally might be compelled to escalate its proliferation posture. A junior ally's response to external threats and internal alliance anxieties does not inevitably lead to overt proliferation. Instead, states weigh the costs, benefits, and feasibility of different strategies, conditioned by the credibility of their alliance partner's nuclear umbrella, combined with the severity of perceived external threats, and the domestic support for nuclear pursuit.

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[96] Ibid.

[97] Ibid, 3.

[98] See Chapter III, second paragraph to see evidence from surveys on public opinion in South Korea.

1.1.6 Extending Narang's Framework into the Spectrum of Proliferation

The study of nuclear proliferation has long been framed as a binary phenomenon—states either possess nuclear weapons, or they do not. However, as demonstrated in the preceding chapters, the reality is far more complex. Proliferation is not merely a dichotomous choice between 0 and 1; rather, it constitutes a spectrum of strategic behavior that varies in intensity, intent, and execution. Throughout this dissertation, the formation of alliances, the twin dilemmas of abandonment and entrapment, and the challenges inherent in extended deterrence commitments have been explored. In the literature review, the question on why states, despite benefiting from security guarantees under alliances, might still contemplate pursuing nuclear weapons was investigated, drawing on Lanoszka's framework to address this puzzle. Lastly, Narang's typology was introduced to understand how states might navigate nuclear development, identifying distinct strategies shaped by each state's strategic environment, domestic constraints, and alliance pressures.

What emerges from this analysis is the need for a more nuanced conception of proliferation—one that captures the gradations between nuclear latency and full-scale weaponization. States do not invariably pursue nuclear weapons with uniform urgency, methods, or objectives; some hedge, others sprint, some shelter under a patron's protection, while others pursue clandestine programs. Yet, despite the critical significance of these variations, literature has too often treated proliferation as a fixed outcome rather than a fluid, iterative process shaped by strategic, political, and technical considerations.

This chapter seeks to bridge that gap by examining the continuum of proliferation behavior—from hedging strategies to overt nuclear breakout attempts. Building on the alliance dynamics explored earlier—particularly the risks of abandonment and entrapment, alongside the credibility concerns inherent in extended deterrence—this chapter shifts the focus to the specific proliferation pathways

available to junior allies. Drawing from Narang's Proliferation Strategy Theory as a theoretical anchor, it conceptualizes nuclear sharing, latency, and breakout not as discrete choices but as strategic points along a continuum of nuclear behavior within asymmetric alliances.

To deepen the analysis beyond the question of why a state might proliferate, this chapter investigates the specific options available to junior allies in asymmetric alliances, assessing their relative costs, benefits, and strategic implications. It further considers the proliferation risks embedded in nuclear latency—not merely as an ambiguous condition but as a deliberate position on the proliferation spectrum that a junior ally may adopt within the alliance framework or as a precursor to independent nuclear development. Finally, the chapter reflects on the potential tensions between these proliferation options and the existing nonproliferation regime. In doing so, the dissertation moves beyond static models of nuclear acquisition, advancing toward a more dynamic, spectrum-based understanding of nuclear behavior within asymmetric alliances.

1.2. The Spectrum of Proliferation

Nuclear sharing encompasses a diverse array of strategic configurations through which nuclear-armed states extend nuclear capabilities, deterrence, or technological assistance to allied nations. These mechanisms serve multiple functions: they not only bolster the junior ally's security through collective deterrence commitments but also reinforce alliance cohesion and, importantly, act as tools to mitigate the risk of nuclear proliferation within the junior partner. In this context, nuclear sharing is conceptualized as part of a broader spectrum of proliferation behavior, positioned between the poles of nuclear neutrality and the attainment of an independent nuclear arsenal.

The spectrum of nuclear sharing is particularly relevant within asymmetric alliance structures, where security guarantees are unevenly distributed between a dominant nuclear power (the senior ally) and its non-nuclear partners (junior allies). The unique vulnerability of junior allies might heighten their preference for "in-between" solutions like nuclear sharing, compared to non-allied states that may sprint towards nuclear weapons more decisively.

Within these alliances, several nuclear sharing models have been implemented historically, providing tangible case studies for comparative analysis. By examining these material applications, it becomes possible to investigate how junior allies navigate the array of proliferation options embedded within alliance frameworks and to assess the conditions under which they might select specific nuclear arrangements over others.

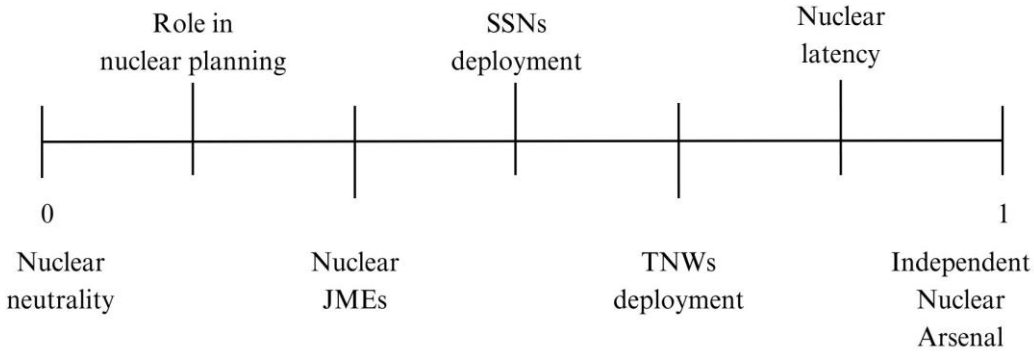

Figure 1: The Spectrum of Proliferation: Options Available to Junior Allies.

However, this spectrum is not confined solely to formalized nuclear sharing agreements. It also encompasses the potential trajectories of nuclear latency—the

deliberate advancement of technological capabilities that enable rapid nuclear breakout—and the ultimate pursuit of an independent nuclear arsenal, which represents a complete departure from alliance-based deterrence structures. These autonomous pathways often involve the strategic conversion of civilian nuclear programs into military applications, including the enrichment or reprocessing of fissile materials for weapons-grade production and the development of dual-use delivery technologies such as multiple independently targetable reentry vehicles (MIRVs), submarine-launched ballistic missile (SLBMs) systems, and nuclear-capable aircraft and carriers.

In this sense, the proliferation spectrum outlined above can be conceptualized as two parallel trajectories: one representing the nuclear options accessible within the framework of the alliance, and the other reflecting the autonomous proliferation pathways available to the junior ally. These trajectories are not mutually exclusive but rather coexist as compatible and contemporaneous avenues, offering the junior ally a range of strategic choices that can be pursued simultaneously or sequentially, depending on shifting security dynamics and alliance considerations.

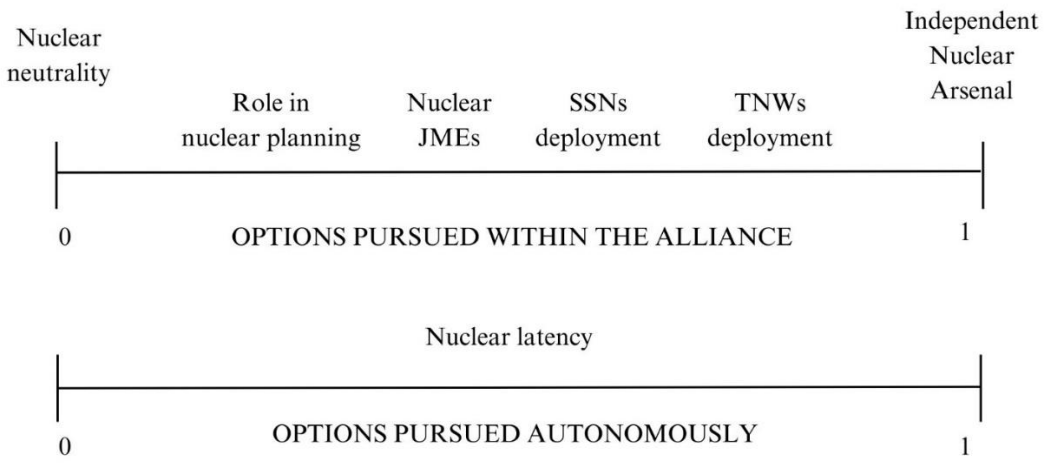

Figure 2: The Spectrum of Proliferation: Options within the Alliance and Options Pursued Autonomously.

The critical distinction between alliance-based nuclear sharing and autonomous proliferation pathways lies in the degree of strategic independence exercised by the junior ally. While nuclear sharing arrangements typically operate within the constraints and assurances of the alliance framework, nuclear latency and independent arsenal development reflect decisions that diverge from, or even directly challenge, the strategic preferences of the senior partner. Thus, the spectrum of proliferation is shaped by the structural dynamics of the alliance, further motivated by the junior ally's nuclear decisions based on evolving threat perceptions, domestic political pressures, and assessments of the credibility of extended deterrence.

In the following sections, each of these proliferation options will be systematically analyzed, drawing on both historical precedents and theoretical models. The analysis will explore how junior allies make strategic choices within and beyond the confines of alliance-based nuclear arrangements, providing a comprehensive understanding of the complex interplay of the different options available to the junior ally.

1.2.1 Nuclear Neutrality: A Baseline for Non-Proliferation

The concept of *nuclear neutrality* lacks a universally accepted definition, with some interpretations rooted in international nuclear law, focusing on a state's neutrality during nuclear conflicts.[99] However, for the purpose of this dissertation, *nuclear neutrality* is defined in relation to a state's proliferation behavior rather than its broader engagement with nuclear technologies. Specifically, a country can be considered neutral when it hosts neither strategic nor tactical nuclear weapons on its territory and

[99] For the concept of neutrality during nuclear conflicts as per international nuclear weapons law see William H. Boothby and W. Heintschel von Heinegg, Neutrality, in: *Nuclear Weapons Law: Where Are We Now?* (Cambridge University Press, 2022), 145-151.

maintains a nuclear program solely for peaceful purposes, in full compliance with the International Atomic Energy Agency's (IAEA) safeguards regime.

This definition acknowledges that nuclear neutrality does not imply a complete renunciation of nuclear technologies, provided these technologies are utilized exclusively for civilian purposes, as delineated under Article IV of the Treaty on Non-Proliferation of Nuclear Weapons (NPT).[100] Therefore, nuclear neutrality is framed here as a status reflecting both the absence of military nuclear capabilities and the commitment to non-proliferation obligations, while allowing for the development of peaceful nuclear energy within internationally recognized legal frameworks. While nuclear neutrality can be turned into nuclear latency with relative ease, each country that has signed an agreement with the IAEA for a civilian nuclear program ought to be considered neutral up to the point where latent capabilities are developed and discovered.

1.2.2 Alliance-Based Nuclear Planning and Responsibility

Nuclear planning within collective security agreements refers to the structured processes through which allied nations engage in consultations, decision-making, and strategic coordination related to nuclear deterrence policies and practical arrangements. These mechanisms enhance the credibility of extended deterrence, foster alliance cohesion, and manage nuclear-related risks. Various alliances and partnerships incorporate nuclear planning bodies, each with differing levels of integration and strategic influence. Indeed, not all nuclear planning entities are the same across

[100] Art. IV of the NPT states the inalienable right for the peaceful use of nuclear energy in compliance with Art. I and II. In United Nations Office for Disarmament Affairs, *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*, accessed February 7, 2025, https://disarmament.unoda.org/wmd/nuclear/npt/text/.

different alliances; rather, they differ primarily based on the distribution of authority and decision-making power concerning nuclear matters.

Key distinctions arise from who holds the ultimate decision-making authority over the use of nuclear weapons, the allocation of nuclear responsibility and control, and the extent to which member states have a role in shaping nuclear posture. This includes influence over critical aspects such as deployment, positioning, operational readiness, and potential use of nuclear forces, as well as decisions regarding the quantity and type of nuclear assets maintained within the alliance framework. These variations reflect the strategic priorities, trust dynamics, and institutional structures unique to each alliance, shaping how nuclear deterrence is managed and operationalized in both peacetime and crisis scenarios.

The dissertation examines the option of a decisional role within nuclear planning groups as part of the broader proliferation spectrum, situating it on the continuum closer to nuclear neutrality. While the ally in question remains a non-nuclear-weapon state, participation in nuclear planning, strategic structuring, and operational readiness—especially through the integration of dual-capable platforms such as aircraft or submarines—represents an initial step away from full nuclear neutrality.

This form of involvement, while fundamentally distinct from and in not equivalent to the possession of nuclear weapons, signifies a nuanced form of contact with potential proliferation. It reflects a scenario where the state indirectly engages with nuclear deterrence mechanisms, leveraging its role in decision-making processes and operational frameworks to influence nuclear posture without crossing the threshold into overt nuclear armament. In this sense, nuclear planning functions as an instrument of strategic influence that embeds the ally within a security architecture where nuclear considerations shape military planning.

The most salient example of collective or allied nuclear mechanisms is the North Atlantic Treaty's Organization (NATO) Nuclear Planning Group (NPG), which was established in 1966 and serves as the Organization's principal body for nuclear policy discussions. All member states of NATO are allowed to participate in the NPG's activities, except France who voluntarily decided not to participate and instead follow a principle of nuclear independence.[101] The NPG's main functions are to oversee and review NATO's nuclear posture according to the changes in the security environment, provide a platform for consultations on nuclear forces and deterrence policy, arms control, and proliferation, coordinate nuclear sharing arrangements between member countries, involve all non-nuclear NATO members in nuclear decision-making, which is based on general consensus.[102] NATO's current nuclear policy is based on NATO's 2022 Strategic Concept and the 2012 Deterrence and Defense Posture Review, as well as guidance from Heads of State and Government at NATO summits, most recently at the 2023 Vilnius Summit.[103]

The NPG plays a critical role in managing the deployment of U.S. B-61 tactical nuclear bombs across European host countries under dual-key arrangements—as it will be explained in detail in the paragraph on Tactical Nuclear Weapons deployment—, where both the U.S. and the host nation must consent to their use.[104] The dual-key arrangement requires joint authorization from both the United States and the host countries for the deployment or use of nuclear weapons stored on the member's soil,

[101] Permanent Representation of France to NATO, "France and NATO: Presentation," accessed February 7, 2025, https://otan.delegfrance.org/France-and-NATO-presentation-1217.

[102] NATO, "Nuclear Planning Group (NPG)," accessed January 8, 2025, https://www.nato.int/cps/en/natohq/topics_50069.htm.

[103] NATO, "Vilnius Summit Communiqué," accessed January 13, 2025, https://www.nato.int/cps/ge/natohq/official_texts_217320.htm.

[104] NATO, "NATO's Nuclear Deterrence Policy and Forces," accessed January 8, 2025, https://www.nato.int/cps/en/natohq/topics_50068.htm.

while the nuclear warheads remain under U.S. control at all times. Although host countries have formal mechanisms to influence nuclear use decisions, ultimate authority and decision of usage over the warheads remains with the U.S. office of the President.

The NPG stands as a unique entity among alliance frameworks, providing member nations with a participatory role in nuclear policy formulation and decision-making processes. In contrast, mechanisms such as the U.S.-Japan Extended Deterrence Dialogue (EDD) and the U.S.-Republic of Korea Extended Deterrence Strategy and Consultation Group (EDSCG) function primarily as consultative forums. These platforms enable the United States and its allies to exchange views on deterrence strategies and regional security concerns. However, they do not confer upon Japan or South Korea a formal role in the decision-making processes regarding the deployment or use of U.S. nuclear assets. Consequently, while these dialogues enhance mutual understanding and coordination, the authority to employ nuclear capabilities remains solely under U.S. discretion.

The U.S.-Japan Extended Deterrence Dialogue (EDD) was established in 2010 "as an enduring venue to discuss ways to sustain and strengthen extended deterrence, which is at the core of the Japan-U.S. Alliance."[105] Since its inception, the EDD has played a pivotal role in enhancing strategic coordination between Japan and the United States. Through regular consultations, it has provided a structured forum for both nations to align their security policies, address emerging regional threats, and adapt their nuclear deterrence strategies accordingly. This ongoing dialogue aims to reinforce the credibility of the U.S. extended deterrence commitment to Japan but also contributes to greater transparency and trust within the alliance, ensuring that both parties remain responsive to the evolving security dynamics in Northeast Asia. The

[105] Ministry of Foreign Affairs of Japan, "Japan-U.S. Extended Deterrence Dialogue," accessed February 8, 2025, https://www.mofa.go.jp/press/release/pressite_000001_00820.html.

EDD has the important role of strengthening Japan's confidence in U.S. security commitments amid North Korean nuclear threats and thus reducing incentives for Japan to consider independent nuclear capabilities.[106]

Building on the foundation of the Extended Deterrence Dialogue (EDD), Japan and the United States have, for the first time, jointly established formal guidelines for extended deterrence at the EDD periodical meeting in December 2024, as announced by the Japanese government.[107] These guidelines outline the framework for U.S. nuclear and conventional deterrence commitments to Japan, reflecting the heightened security challenges in the region. While the specific details of the guidelines remain classified, they are believed to address key standards and intergovernmental procedures related to the potential use of nuclear weapons. According to the Ministry of Foreign Affairs, the guidelines were the product of extensive working-level discussions between Tokyo and Washington, building on consultations that have taken place since the EDD's establishment in 2010.[108]

A similar consultative dialogue has been established between the U.S. and South Korea in 2016, known as the U.S.-South Korea Extended Deterrence Strategy and Consultation Group (EDSCG). However, the EDSCG was reactivated only in December 2023, when its fourth session was held, after the May 2022 summit declaration of U.S. President Joe Biden and his South Korean counterpart President Yoon Seok-yeol.[109] The body functions as a high-level consultative forum to

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[106] Ibid.

[107] JIJI, "Japan and U.S. draw up guidelines for extended deterrence," *The Japan Times*, December 27, 2024, https://www.japantimes.co.jp/news/2024/12/27/japan/japan-us-extended-deterrence/.

[108] "Japan-U.S. Extended Deterrence Dialogue."

[109] U.S. Department of Defense, "Joint Press Release: Extended Deterrence Strategy and Consultation Group," accessed February 5, 2025,

coordinate U.S.-ROK strategies for countering North Korean nuclear threats, and its main objectives are to work on deterrence policy alignment, missile defense strategies, joint military exercises (JMEs), and enhance crisis management cooperation.[110]

As indicated, nuclear planning mechanisms within collective security agreements vary significantly in structure and scope. NATO's NPG represents the most institutionalized model, with formal decision-making roles for member states. At the same time, bilateral dialogues, like the U.S.-Japan EDD and the U.S.-South Korea EDSCG, provide tailored platforms for nuclear consultations. However, states such as South Korea have long strived for a more decisive role within the planning of U.S. extended deterrence strategy, and in July 2023, as part of the Washington Declaration's packet of initiatives, a body closer to the NPG was created: the Nuclear Consultative Group (NCG) between the U.S. and the Republic of Korea.

Since its inception, the NCG has been convened on four occasions, the last being in January 2025. It meets twice per year at the principal level, supported by frequent working-level meetings.[111] It focuses on nuclear and strategic planning, Conventional-Nuclear Integration (CNI) exercises, simulations, and training, nuclear consultation and communication processes during crises and contingencies, the establishment of dedicated secure communications systems, risk reduction practices, strategic messaging, and Security and Information sharing protocols.[112] The first U.S.-

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https://www.defense.gov/News/Releases/Release/Article/3526956/joint-press-release-extended-deterrence-strategy-and-consultation-group/.

[110] U.S. Department of State, "The United States of America-Republic of Korea Nuclear Consultative Group (NCG)," [factsheet], accessed February 5, 2025, https://2021-2025.state.gov/office-of-the-spokesperson/releases/2025/01/the-united-states-of-america-republic-of-korea-nuclear-consultative-group-ncg.

[111] Ibid.

[112] Ibid.

ROK Nuclear Consultative Group interagency table-top simulation was conducted in September, 2024 with the aim to enhance strategic coordination. The simulation played a pivotal role in advancing the objectives of the NCG by reinforcing the alliance's cooperative decision-making framework on nuclear deterrence and improving preparedness for potential nuclear contingencies on the Korean Peninsula. Through the NCG, both countries committed to the improvement of joint exercises and training activities, focusing on the strategic application of nuclear deterrence to address evolving security challenges in the region.[113]

The establishment of the NCG in 2023, as it will be discussed afterwards, follows an ongoing process of demands by South Korea for the strengthening of the U.S. extended deterrence credibility and is one of the measures that the Washington Declaration employed to counter the rising support for independent proliferation in South Korea. Indeed, despite these efforts, challenges persist. South Korea has expressed concerns over the ambiguity in U.S. declaratory policy regarding the use of nuclear weapons in response to a North Korean attack. This ambiguity has led to calls within South Korea for more explicit guarantees and a greater role in nuclear decision-making to ensure a credible deterrence posture:[114] South Korea would like to have at least an agreement for which the government in Seoul had an equal decisional role and

[113] U.S. Indo-Pacific Command, "Joint Statement on the U.S.-ROK Nuclear Consultative Group Simulation," accessed February 8, 2025, https://www.pacom.mil/Media/News/News-Article-View/Article/3898302/joint-statement-on-the-us-rok-nuclear-consultative-group-simulation/.

[114] Sangkyu Lee, Suon Choi, Adam Mount, and Toby Dalton, "Nuclear for Nuclear? Understanding Divergent South Korean and American Perceptions on Deterring North Korea," *Carnegie Endowment for International Peace*, June 27, 2024, https://carnegieendowment.org/research/2024/06/nuclear-for-nuclear-understanding-divergent-south-korean-and-american-perceptions-on-deterring-north-korea.

shared responsibility for its nuclear destiny in the scenario of nuclear war on the Peninsula.[115]

In fact, for the moment being, the NCG is a de facto consultative group, and it remains to be seen whether it could be expanded to involve decisional roles. Nevertheless, participation in the "planning" mechanisms can be considered a compromise made by junior allies that are not considering independent proliferation at a given time. While the junior ally in the asymmetric alliance is considering its options, planning allows for a first inclusion in nuclear-related issues that are crucial for the defense of the country.

1.2.3 Nuclear Signaling Through Joint Military Exercises (JMEs)

Joint Military Exercises (JMEs) are coordinated training operations conducted across land, sea, and air domains by two or more nations' armed forces to enhance interoperability, strengthen military cooperation, and improve operational readiness. These exercises have become a highly visible form of security cooperation among states, and may include conventional warfare scenarios, peacekeeping operations, cyber defense, and, in some cases, the simulation or integration of nuclear components.

Joint Military Exercises involving the simulation of use of nuclear assets and dual-capable carriers are conducted by various nations to enhance readiness, demonstrate deterrence capabilities, and ensure the effectiveness of their nuclear forces. Since the beginning of the Cold War, JMEs have been conducted by the U.S and its allies as demonstrations of nuclear readiness and resolve towards the Soviet Union. The practice of JMEs has remained through the decades, although, by the first

[115] South Korea does not have authority over the deployment or use of nuclear weapons in response to an attack on its territory; this responsibility resides solely with the President of the United States.

half of the 1980s, "nuclear signaling through military exercises shifted to less visible types of maneuvers" and large-scale conventional operations became the norm.[116] However, the frequency of JMEs has consistently increased over the past three decades,[117] demonstrating their importance.

The need for JMEs is justified by NATO with the multinational and joint nature of operations among allies, for which it is essential to strengthen coherence and interoperability among the national forces involved. This requires the implementation of shared procedures and standards, alongside the necessity for Alliance forces to engage in joint training, exercises, and operations.[118] JMEs that involve simulation of nuclear activities are often designed to signal deterrence capabilities to adversaries. By showcasing the readiness and operational procedures of nuclear forces, states aim to dissuade potential threats through the credible projection of military power, reinforcing the credibility of extended deterrence commitments.

JMEs allow military forces to test nuclear command, control, and communication systems under realistic conditions. validate procedures for nuclear deployment, decision-making hierarchies, and crisis response. Within alliances, these exercises help integrate diverse doctrines, ensuring that forces from different nations

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[116] James A. Blackwell, *Cognitive Hyper-Dissonance: Nuclear Signaling Through Military Exercises*, IDA Paper NS P-11014, Institute for Defense Analyses (IDA), March 2020, iv, https://www.ida.org/-/media/feature/publications/c/co/cognitive-hyper-dissonance-nuclear-signaling-through-military-exercises/p-11014.ashx.

[117] Ash Rossiter, Yee-Kuang Heng, and Brendon J. Cannon, "Looking Under the Hood of Joint Naval Exercises: Motives and Perceived Benefits for Japan," *The Pacific Review* 38, no. 1 (2025): 147.

[118] NATO, "Exercises," *Supreme Headquarters Allied Powers Europe (SHAPE)*, https://shape.nato.int/exercises. For the complete list of NATO's JMEs currently in place see https://shape.nato.int/nato-exercises.

can operate cohesively in nuclear-related scenarios. For example, NATO's nuclear sharing arrangements are practiced during joint drills, aligning policies among nuclear and non-nuclear member states. The JMEs further simulate crisis scenarios to prepare military leaders and policymakers for high-stakes decision-making, exploring escalation dynamics and decision timelines of nuclear Command and Control. They also serve as a fundamental platform for testing the allies' technological capabilities, especially strategic bombers, ballistic missile submarines, and dual-capable aircraft as nuclear delivery systems. This allows for testing the integration of conventional and nuclear forces in coordinated operations.

Within NATO, the JME known as "Steadfast Noon" involves member countries to practice the handling and deployment of tactical nuclear weapons (TNWs) with dual-capable aircraft owned and operated by the host countries' militaries. The exercise runs for two weeks and is "a routine and recurring training activity that happens every October."[119] The last "Steadfast Noon" exercise in October 2024 involved 2,000 military personnel from different airbases and multiple aircraft types, including nuclear-capable jets, bombers, fighter escorts, refuelling aircraft and planes capable of reconnaissance and electronic warfare. The exercise acts as the demonstration for the U.S. nuclear guarantees to its allies, which are backed by constantly revised operational readiness and interoperability.

Currently, the U.S. and the Republic of Korea hold several joint military exercises on an annual basis, which are regulated by the ROK-US Mutual Defense Treaty and justified by the fact that the Korean Peninsula is in a state of war since the signing of the Armistice Agreement in 1953.[120] The exercises have, first, the purpose

[119] NATO, "NATO holds annual nuclear exercise: Steadfast Noon," October 14, 2024, https://www.nato.int/cps/fr/natohq/news_229447.htm.

[120] The agreement established the military ceasefire needed to create room for a final diplomatic peace treaty, which was never signed. As a result, the Korean Peninsula is still technically at

of testing interoperability and preparedness of the forces, and, second, they serve as a strong signal to the DPRK that the U.S.-ROK alliance is prepared to retaliate with a variety of options and that it will employ all available elements to strike back. Lastly, JMEs function more importantly as costly reassurance measures from the senior ally, with the aim of reducing abandonment fears in the junior ally. The combined U.S.-ROK military exercises have been a consistent feature since the Korean War's armistice in 1953. Despite undergoing various name and structural changes, these exercises have served as strategic tools, often adjusted in response to diplomatic engagements with North Korea.

For instance, during the 1994 nuclear crisis, the U.S. and South Korea canceled the annual "Team Spirit" exercise as an incentive for North Korea to engage in dialogue, leading to the Agreed Framework. Similarly, in 2018, following the Singapore Summit between President Donald Trump and Kim Jong-un, major exercises like "Foal Eagle" and "Ulchi-Freedom Guardian," which entail the use of aircraft carriers and strategic bombers, were suspended to foster diplomatic progress.[121] However, as negotiations stalled, these exercises were resumed in modified forms to reaffirm the alliance's commitment to readiness and deterrence.

This pattern of suspension and resumption of JMEs underscores the dual role of these exercises as both deterrents and diplomatic instruments in managing North Korea relations. Many among scholars and activists have asked for the total suspension

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war, with the UNC continuing to uphold the Armistice Agreement, in United Nations Command. n.d. "United Nations Command > History > 1951-1953: Armistice Negotiations," accessed February 9, 2025, https://www.unc.mil/History/1951-1953-Armistice-Negotiations/.

[121] Yeon-chul Kim, "[Column] 70 years of armistice and joint S. Korea-US drills," *Hankyoreh*, March 20, 2023, https://english.hani.co.kr/arti/english_edition/english_editorials/1084356.html.

of the joint military exercises between the U.S. and South Korea,[122] which are seen as stirring up provocations that can escalate tensions on the Peninsula. However, the temporary suspension of JMEs during the Moon Jae-in's administration provoked rising tensions and fear of abandonment in South Korea.

1.2.4 Bilateral Cooperation: Nuclear Submarine (SSNs) Transfers

The United States has ratified bilateral security agreements with Japan, Pakistan, South Korea, Taiwan, and the Philippines, and established other multilateral pacts, such as the 1951 Australia, New Zealand, United States Security Treaty and the 1947 Inter-American Treaty of Reciprocal Assistance, also known as Rio Pact. Most of these agreements entail extended deterrence without actual nuclear sharing arrangements, however, both the 1958 U.S.-U.K. Mutual Defence Agreement (MDA)[123] and the most recent case of the AUKUS Partnership entailed bilateral nuclear cooperation.

While the MDA between Washington and London reflects past arrangements prior to the negotiations of the NPT, the recent example of the AUKUS partnership is particularly informative, since it entails the transfer of HEU nuclear propelled submarines to Australia, a country which is part of the NPT as a non-nuclear weapon state. Announced in September 2021, the AUKUS is a trilateral security pact between Australia, the United Kingdom, and the United States.[124] Its primary objective is to

[122] VFP, "Suspend the ROK-US Military Exercises."

[123] United Kingdom and United States of America, *Agreement for Co-operation on the Uses of Atomic Energy for Mutual Defence Purposes*, Washington, July 3, 1958, Treaty Series No. 41 (1958), https://treaties.fcdo.gov.uk/data/Library2/pdf/1958-TS0041.pdf.

[124] U.S. Department of Defense, "AUKUS: The Trilateral Security Partnership Between Australia, U.K. and U.S.," accessed January 28, 2025, https://www.defense.gov/Spotlights/AUKUS/.

enhance defense and security cooperation in the Indo-Pacific in response to the perceived escalating threats in the region. While SSNs involve only nuclear propulsion, and not nuclear weapons, their strategic significance essentially blurs this distinction, especially at the international level and under the NPT.

Australia plans to acquire at least eight nuclear-powered submarines and has committed to investing $3 billion to enhance the U.S. submarine industrial base, aiming to expedite the delivery of submarines and bolster production capabilities.[125] The initial phase of the agreement involves Australia purchasing three U.S. Virginia-class nuclear-powered attack submarines starting from the 2030s.[126] Subsequently, Australia will collaborate with the UK to develop a new submarine design, integrating advanced technologies from all three nations and will, at the same time, consolidate the industrial base for domestic production of future submarines. The first SSN AUKUS-class submarine is scheduled to be constructed in the U.K. and delivered to Australia by the late 2030s, while Australia plans to develop its domestic capability to manufacture the submarines by the 2040s. Furthermore, personnel from the Australian Navy will train

[125] Kirsty Needham, "Australia makes $500 mln AUKUS payment ahead of US defence secretary meeting," *Reuters*, February 7, 2025, https://www.reuters.com/world/australia-makes-500-mln-aukus-payment-ahead-us-defence-secretary-meeting-2025-02-07/.

[126] The purchase was under condition of U.S. Congress approval, which was established in December 2023 with the 2024 National Defence Authorization Act (NDAA). This authorized the transfer, on-site maintenance by Australians, and personnel training for the development of the Australian submarine industrial base. In Australian Department of Defence, "Passage of Priority AUKUS Submarine and Export Control Exemption Legislation by the United States Congress," [media release], December 15, 2023, https://www.minister.defence.gov.au/media-releases/2023-12-15/passage-priority-aukus-submarine-and-export-control-exemption-legislation-united-states-congress.

with both the U.S. and U.K. naval departments.[127] Lastly, from 2027 onwards, both countries will forward-deploy nuclear submarines to Australian bases.[128]

The AUKUS deal makes Australia the first non-nuclear-weapon state to field a nuclear-powered submarine as part of the trilateral security partnership with the U.S. and the U.K. This is also the first time the U.S. has decided to share technology on nuclear submarine development aside from the MDA with the U.K.[129] The decision by the U.S. and the UK to equip Australia with nuclear submarines has created uneasiness among proliferation and disarmament experts, who are concerned about the highly enriched uranium (HEU) fueling on-board reactors which are welded shut, "making it more difficult for the weapons-grade fuel to be removed."[130]

Even though Australia has displayed compliance with nonproliferation norms since its entry in the NPT, nonproliferation observers worldwide are worried about the precedent that the nuclear-powered submarine-sharing scheme sets. The International

[127] Kelsey Davenport, "AUKUS Plans Announced," *Arms Control Association*, April 2023, https://www.armscontrol.org/act/2023-04/news/aukus-plans-announced.

[128] The agreement, known as Submarine Rotational Forces-West (SRF-West), signals a new trilateral submarine force posture initiative with the rotational deployment of four U.S. Virginia-class submarines and one UK Astute-class submarine to Western Australia's HMAS Stirling naval base, in Ashley Townshend, "The AUKUS Submarine Deal Highlights a Tectonic Shift in the U.S.-Australia Alliance," *Carnegie Endowment for International Peace*, March 27, 2023, https://carnegieendowment.org/posts/2023/03/the-aukus-submarine-deal-highlights-a-tectonic-shift-in-the-us-australia-alliance.

[129] Julia Masterson, "U.S., UK Pledge Nuclear Submarines for Australia," *Arms Control Association*, October 2021, https://www.armscontrol.org/act/2021-10/news/us-uk-pledge-nuclear-submarines-australia.

[130] Davenport, "AUKUS Plans Announced."

Atomic Energy Agency (IAEA) is engaged in discussions to ensure that the transfer complies with non-proliferation obligations and that nuclear materials remain under appropriate safeguards.[131] However, doubts remain on the sovereignty over the submarines, and whether reliance on U.S. technology poses potential constraints in independent operations. Experts have voiced the fact that the transfer of weapons-grade HEU nuclear-powered submarines is against NPT articles I and II and corresponds to an unexpected policy rearrangement in Washington which could have a rather negative impact on disarmament efforts.

As the transfer of nuclear-powered submarines to a non-nuclear weapon country is unprecedented, it could pave the way for other such transfers by the U.S. to the rest of its junior allies in Northeast Asia. However, this would pose serious proliferation risks as operating nuclear-powered submarines involves handling highly enriched uranium (HEU), the same nuclear material that is employed for weapon programs. The AUKUS deal sparked an intense debate within the international community, drawing sharp reactions from key global actors. China strongly condemned the agreement, accusing the U.S., UK, and Australia of fueling regional instability and igniting the risk of an arms race in the Indo-Pacific.[132] France expressed outrage, particularly due to Australia's abrupt cancellation of a multi-billion-dollar

[131] IAEA, "IAEA Director General Statement in Relation to AUKUS Announcement," [press release], April 9, 2024, https://www.iaea.org/newscenter/pressreleases/iaea-director-general-statement-in-relation-to-aukus-announcement-0.

[132] Amy Hawkins and Rhoda Kwan "China Says Aukus Submarines Deal Embarks on 'Path of Error and Danger'," *The Guardian*, March 14, 2023, https://www.theguardian.com/world/2023/mar/14/china-aukus-submarines-deal-embarks-path-error-danger.

submarine contract, describing the deal as a betrayal that undermined diplomatic trust among allies.[133]

Beyond these national responses, think tanks such as Chatham House raised concerns about the implications for nuclear non-proliferation, warning that transferring nuclear-powered submarine technology to a non-nuclear-weapon state like Australia could set a dangerous precedent. The reports primarily emphasized the potential erosion of IAEA safeguards and the risk of weakening the global nonproliferation regime.[134] Despite these critiques, AUKUS supporters argue that the pact strengthens deterrence in the Indo-Pacific, particularly amid growing Chinese assertiveness. Nonetheless, the deal continues to polarize diplomatic discourse, as it represents a significant shift in defense collaboration in the Indo-Pacific, with the transfer of nuclear-powered submarines to Australia being a central and transformative element.

This development raises pertinent questions regarding the aspirations of other U.S. allies, notably South Korea, in acquiring similar capabilities. For a junior ally like South Korea, SSNs represent both a capability enhancement and a signal of strategic autonomy, pushing the boundaries of the alliance-based spectrum leaving the door open for indirectly violating nonproliferation norms. Discussions regarding South Korea's potential acquisition of SSNs have intensified in recent years, driven by North

[133] Philippe Ricard, "Over Aukus deal, France took its time to process the affront," *Le Monde*, March 14, 2023, https://www.lemonde.fr/en/international/article/2023/03/14/over-aukus-deal-france-took-its-time-to-process-the-affront_6019338_4.html.

[134] Mike Higgins, "The AUKUS nuclear submarine deal is a challenge for the IAEA," *Chatham House*, last updated June 2023, https://www.chathamhouse.org/2022/08/what-are-lasting-impacts-aukus-agreement.

Korea's accelerated efforts to enhance its naval strength, particularly through the development of underwater attack drones and submarine-launched ballistic missiles (SLBMs).[135] Indeed, Seoul has expressed interest in developing nuclear-powered submarines (K-SSNs) to enhance its maritime security and deterrence posture, particularly in response to regional threats by the DPRK. In 2023, Admiral Kim Myung-soo, the nominee for the Republic of Korea's Joint Chiefs of Staff, emphasized the necessity for South Korea to possess nuclear submarine capabilities as an independent deterrent for the North, but also for the PRC and the Russian Federation. Many former captains and professors share this view and believe that the acquisition or development of K-SSNs is strategically fundamental.[136]

However, existing ROK-U.S. nuclear agreements[137] impose constraints on the use of nuclear materials for military purposes, and the U.S. position on assisting South Korea in acquiring SSNs has been rather cautious. As of June 2024, reports indicated that the U.S. was unlikely to support South Korea's pursuit of nuclear-powered submarines, primarily due to commitments under the AUKUS framework and concerns over nuclear proliferation for the potential spread of nuclear sensitive materials across

[135] Wonju Yi, "U.S. Commander Suggests Possibility of Nuclear-Powered Submarines for South Korea," *Yonhap News Agency*, https://en.yna.co.kr/view/AEN20240714002400315.

[136] Jamie Chang, "South Korean Admiral Claims That Nuclear-Powered Submarines Are Necessary," *Naval News*, November 16, 2023, https://www.navalnews.com/naval-news/2023/11/south-korean-admiral-claims-that-nuclear-powered-submarines-are-necessary/.

[137] U.S. Department of State, "U.S.-Republic of Korea (R.O.K.) Agreement for Peaceful Nuclear Cooperation," accessed January 29, 2025, https://www.state.gov/bureau-of-international-security-and-nonproliferation/releases/2025/01/u-s-republic-of-korea-r-o-k-agreement-for-peaceful-nuclear-cooperation. The 123 Agreement will be discussed in the following Chapter.

the region.[138] Nevertheless, a month later in July 2024, the Chief of U.S. Indo-Pacific Command Paparo suggested that the introduction of nuclear-powered submarines in South Korea could be considered in the future, indicating a potential shift in U.S. policy. As the reporter argues "it is considered rare for a high-ranking U.S. military official to discuss the possibility of the South acquiring SSNs."[139]

Indeed, the AUKUS precedent complicates the narrative, as it involves the transfer of critical nuclear submarine technology to a non-nuclear-weapon state under the NPT. This situation could lead to increased pressure from allies, as indicated by South Korea's demands, who may argue for similar capabilities to address their security needs. For the moment of writing, while South Korea has articulated a strong desire to develop nuclear-powered submarines, significant political, legal, and non-proliferation challenges persist. The evolving dynamics of international security alliances and the precedents set by agreements like AUKUS will play a crucial role in shaping the future discourse on this issue.

1.2.5 NATO-style Nuclear Sharing: Forward-deployment of Tactical Nuclear Weapons

NATO did not entail nuclear sharing from the beginning. When NATO was founded on April 4, 1949, with the signing of the North Atlantic Treaty, its primary

[138] Reuters, "U.S. Doubtful It Could Help S. Korea with Nuclear-Powered Subs," June 1, 2024, https://www.reuters.com/world/us-doubtful-it-could-help-s-korea-nuclear-powered-subs-2024-06-01/.

[139] Yi, "U.S. Commander Suggests Possibility of Nuclear-Powered Submarines."

focus was on collective defense under Article 5,[140] which states that an attack against one member is considered an attack against all. With the outbreak of the Korean War (1950–1953) and the rise of Soviet nuclear capabilities, NATO began to reconsider its defense posture to include shared nuclear arrangements. With the adoption of the "Massive Retaliation" policy in the 1957 MC 14/2 document,[141] which emphasized nuclear response as key to preventing Soviet aggression, NATO began integrating nuclear weapons into its strategic doctrine.

Since the 1950, the U.S. has stationed a limited number of B-61 tactical nuclear weapons[142] in six bases located in five countries in Europe,[143] at the time maintaining exclusive custody and control over them. Instead, NATO-style nuclear sharing

[140] "The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defense" in NATO, "The North Atlantic Treaty," April 4, 1949, https://www.nato.int/cps/en/natohq/official_texts_17120.htm.

[141] North Atlantic Treaty Organization, *Overall Strategic Concept for the Defense of the North Atlantic Treaty Organization Area (MC 14/2)*, May 23, 1957, 289, https://www.nato.int/docu/stratdoc/eng/a570523a.pdf.

[142] The B-61 is a low to intermediate-yield strategic and tactical thermonuclear gravity bomb. It can be deployed on a range of dual-capable aircrafts (DCAs) such as the F-15E, F-16 and Tornado, which are currently being modernized.

[143] "The United States and its NATO allies do not disclose exact figures for its European-deployed stockpiles. In 2021, it is estimated that there are 100 U.S.-owned nuclear weapons stored in five NATO member states across six bases: Kleine Brogel in Belgium, Büchel Air Base in Germany, Aviano and Ghedi Air Bases in Italy, Volkel Air Base in the Netherlands, and Incirlik in Turkey" in Center for Arms Control and Non-Proliferation, "U.S. Nuclear Weapons in Europe," [factsheet], August 2021, https://armscontrolcenter.org/wpcontent/uploads/2021/08/NATO_NSNW_factsheet.pdf.

arrangements as "the sharing of the Alliance's nuclear deterrence mission and the related political responsibilities and decision-making"[144] was introduced in the second half of the 1960s, with the creation of the Nuclear Planning Group (NPG) in 1966 as the main forum to discuss nuclear issues within NATO.[145] With the NPG, dual-key control systems were drafted to ensure that both the U.S. and the allied nations which hosted the nuclear devices had to authorize their use. Moreover, host nations maintain aircraft "available for nuclear roles at various levels of readiness," capable of delivering the B-61 nuclear weapons, and personnel from these countries are trained to handle and deploy the weapons in coordination with the U.S.

Moreover, nuclear sharing involves the contribution of nuclear capabilities, aircraft, and infrastructure from several member states to support collective defense. Within the NATO alliance, there are three recognized nuclear weapon states: the U.S., which was the first country to detonate a nuclear device in 1945, the UK, which detonated its first nuclear bomb in 1952, and France, which joined the nuclear countries with a successful test in 1960.[146] All members of the alliance, except France, are part of the NPG[147] and retain a decision-making role on NATO's nuclear policy and posture. This has allowed member countries without nuclear arsenals to participate in nuclear planning and, if necessary, the deployment of nuclear weapons. While the North Atlantic Council is the ultimate authority within NATO, the NPG acts as the senior body on nuclear matters, reviewing the Alliance's nuclear policy, including the

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[144] NATO, "NATO's Nuclear Sharing Arrangements," February 2022, https://www.nato.int/nato_static_fl2014/assets/pdf/2022/2/pdf/220204-factsheet-nuclear-sharing-arrange.pdf.

[145] Ibid.

[146] "Nuclear Testing Chronology," *AtomicArchive*, accessed February 4, 2025, https://www.atomicarchive.com/almanac/test-sites/testing-chronology.html.

[147] Permanent Representation of France to NATO, "France and NATO."

safety, security and survivability of nuclear weapons, and communications and information systems.

Aside from the five nuclear forbearing states, seven additional countries—Czech Republic, Denmark, Greece, Hungary, Norway, Poland, and Romania—contribute to the Support of Nuclear Operations With Conventional Air Tactics (SNOWCAT), which is used to provide conventional military assets from non-nuclear states to support nuclear air strike missions.[148] NATO' joint military exercise (JME) that practices nuclear strike missions employing the dual-capable aircraft is called Steadfast Noon.[149]

With NATO being born before the signature and ratification of the NPT, in 1968 and 1970 respectively, U.S. nuclear sharing arrangements were already present and had to be put in compliance with NPT's article V.[150] While some countries argued that NATO's collective nuclear defense did not comply with articles I and II of the NPT,[151] the U.S. argued that its arrangements were consistent, as control over the

[148] Hans Kristensen, "NATO Nuclear Exercise Underway with Czech and Polish Participation," *Federation of American Scientists*, October 17, 2017, https://fas.org/publication/steadfast-noon-exercise/.

[149] Ibid.

[150] United Nations Office for Disarmament Affairs, *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*, accessed February 7, 2025, https://disarmament.unoda.org/wmd/nuclear/npt/text/.

[151] Art I commits NWS not to transfer "to any recipient whatsoever" nuclear weapons and "not to assist or encourage or induce" any NNWS to acquire or manufacture a nuclear weapon, agreeing not to engage in any kind of nuclear trade with NNWS that is not under IAEA safeguards. Art II commits NNWS not to seek assistance for the manufacture, acquire, or receive nuclear weapons. To verify compliance, NNWS agree to the IAEA safeguards system on all nuclear materials in all peaceful nuclear activities. In VCDNP, *The Nonproliferation Regime*, YouTube [video], August 17, 2020, https://youtu.be/favJfZmoa3k.

nuclear weapons would not be transferred to non-nuclear states unless a general war broke out, which would negate treaty obligations.[152]

From 1958 to 1991, South Korea has hosted "all sorts of [U.S.] tactical nuclear weapons [...], from cannons, rockets to cruise missiles and standard warheads."[153] Then, in 1991, U.S. President Bush announced the withdrawal of all land- and sea-based weapons from the country, following the bilateral disarmament efforts with the Soviet Union of the time. During those 33 years of tactical forward-deployment, Washington kept operational control of the weapons, which remained under the command of the U.S. Forces Korea (USFK).

Since the early 2000s, there have been periodic discussions within South Korea regarding the redeployment of U.S. tactical nuclear weapons (TNWs) on the Korean Peninsula. These discussions have been influenced by North Korea's advancing nuclear capabilities and concerns about the credibility of the U.S. extended deterrence. While no formal requests were made after the DPRK's first nuclear test in 2006, policymakers started to consider the redeployment of such weapons on South Korean soil. Proponents of redeploying U.S. nuclear weapons to the Korean Peninsula contend that such a move would convey a strong deterrent signal to North Korea and reaffirm Washington's firm security commitment to South Korea. They argue that having these weapons stationed locally would enable a faster nuclear response in the event of a

[152] Center for Security Studies (CSS), "NATO: Nuclear Sharing or Proliferation?," accessed February 5, 2025, https://www.files.ethz.ch/isn/90409/05-04%20NATO%20Nuclear%20Sharing%20or%20Proliferation.pdf.

[153] Sun-young Lee, "[Korean History] Nuclear weapons and South Korea," *The Korea Herald*, January 18, 2023, https://m.koreaherald.com/article/3043010.

North Korean attack and could serve the strategic purpose of a leverage point in negotiations with North Korea.[154]

In 2017, the Liberty Korea Party (LKP), South Korea's main opposition party at the time, formally called for the redeployment of U.S. TNWs. Defense Minister Song Young-moo suggested that redeployment was an option worth reviewing.[155] However, President Moon Jae-in's administration maintained its stance against such a move, emphasizing the goal of denuclearization of the Korean Peninsula. Moreover, during Moon's successor presidential campaign, the former President Yoon Suk-yeol stated that he would request the redeployment of U.S. tactical nuclear weapons in South Korea if a significant threat from North Korea emerged.[156] This proposal was met with opposition from U.S. officials, with Deputy Assistant Secretary of State for Japan and Korea Mark Lambert stating that such a redeployment would not align with U.S. policy.[157]

While maintaining the denuclearization of the Korean Peninsula as a foreign policy objective and strengthening conventional deterrence measures, segments of the public and officials have advocated for the redeployment of U.S. tactical nuclear

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[154] Amy F. Woolf and Emma Chanlett-Avery, *Redeploying U.S. Nuclear Weapons to South Korea: Background and Implications in Brief*, Congressional Research Service, September 14, 2017, https://crsreports.congress.gov/product/pdf/R/R44950.

[155] Alex Ward, "South Korea wants the US to station nuclear weapons in the country. That's a bad idea.," *Vox*, September 5, 2017, https://www.vox.com/world/2017/9/5/16254988/south-korea-nuclear-weapons-north-korea-trump.

[156] Scott S. Snyder, "How a New U.S.-South Korea Deal Can Deter the North Korean Nuclear Threat," *Council on Foreign Relations*, February 3, 2023, https://www.cfr.org/in-brief/how-new-us-south-korea-deal-can-deter-north-korean-nuclear-threat.

[157] William Gallo, "US Rules Out Redeploying Tactical Nukes to South Korea," *VOA News*, September 24, 2021, https://www.voanews.com/a/us-rules-out-redeploying-tactical-nukes-to-south-korea/6243767.html.

weapons on many occasions. However, both from a material and a political point of view —and isolating the decision from North Korean reactions—, the U.S. has been drastically against the option of redeployment. For instance, prior to their redeployment of TNWs to South Korea—which would be the same B-61 type of weapons as in NATO's forward deployment in Europe—it would be necessary for Washington to rebuild the entire infrastructure to store these weapons, and to train and certify personnel responsible for their maintenance and for the operation of aircraft designated for nuclear missions.[158] Moreover, the redeployment constituted an unfeasible option, against U.S. long sought nonproliferation efforts, and overall deterrence strategy in the region.[159]

Moreover, the efficacy and relevance of NATO-style nuclear sharing arrangements have been subjects of considerable debate within the strategic studies community. Critics argue that such frameworks may no longer align with contemporary security dynamics. For instance, Walt has contended that the U.S. continued commitment to extended nuclear deterrence, including nuclear sharing agreements, is anachronistic and potentially destabilizing. He asserts that these arrangements not only risk entangling the U.S. in conflicts that fall outside its core national interests but also perpetuate security dependencies that inhibit allied states from assuming greater responsibility for their own defense.[160]

Similarly, Matthew Fuhrmann argues that the forward deployment of U.S. tactical nuclear weapons—a feature of deterrence posture during the Cold War—has become strategically redundant. According to him, the conditions that initially justified such deployments, such as the need to reassure vulnerable allies against the Soviet

[158] Woolf and Chanlett-Avery, *Redeploying U.S. Nuclear Weapons to South Korea*.

[159] Ibid.

[160] Stephen M. Walt, "It's Time to Fold America's Nuclear Umbrella," *Foreign Policy*, March 23, 2021, https://foreignpolicy.com/2021/03/23/its-time-to-fold-americas-nuclear-umbrella/.

threat, have fundamentally shifted. As a result, the continued reliance on these practices may contribute little to deterrence while unnecessarily complicating diplomatic efforts and crisis stability in the current security environment.[161] A report by the Nuclear Threat Initiative further shares this view, asserting that "NATO's nuclear posture in Europe today is a relic from the Cold War and disconnected from the security requirements of the twenty-first century. These weapons were once foreseen to threaten targets in Eastern Europe—West of the Soviet Union. For today's and tomorrow's potential political and military challenges to NATO, they seem hardly suited."[162]

Thus, not only the nuclear strategic community is already skeptical of NATO-style nuclear arrangements, but it also remains to be verified whether new potential nuclear sharing agreements between the U.S. and South Korea respect the Nonproliferation Regime on one side, and to what extent they would further complicate the issue of denuclearization on the Korean Peninsula. Indeed, the regime in Pyongyang would not tolerate any kind of forward deployment, which is seen by the DPRK as an outrageous provocation and could require a potentially catastrophic nuclear response. This is particularly true after the DPRK announced in October 2024 to have proceeded with an unprecedented constitutional change defining South Korea as a hostile state, and the main enemy of the regime.[163] This entailed the recognition of South Korea as a separate state for the first time in the history since the Korean War,

[161] Fuhrmann, "On Extended Nuclear Deterrence," 68.

[162] Nuclear Threat Initiative (NTI), *NTI Nuclear Materials Security Framework: Chapter 4*, accessed January 8, 2025, https://www.nti.org/wp-content/uploads/2021/09/NTI_Framework_Chpt4.pdf.

[163] Hyungjin Kim, "North Korea says its revised constitution defines South Korea as 'hostile state' for first time," *AP*, October 17, 2024, https://apnews.com/article/north-korea-constitution-change-enemy-12a1ec860d84b106265d35676cb1a0b3.

and a radical shift in policy, representing a clear break from the decades-long pursuit of Korean Peninsula unification by the North.[164]

1.3 Nuclear Latency and the Threat to Nonproliferation

Nuclear latency is defined as the possession of uranium enrichment and plutonium reprocessing (ENR) capabilities that provide a country with the potential to build nuclear weapons.[165] Nuclear latency is the characteristic possessed voluntarily by those countries that Narang defines as hedgers, whether their technical, insurance, or hard hedgers. What's more, latent nuclear capability can be seen as a *hedge* against both external threats and alliance unreliability. Fuhrmann and Tkach have systematically codified data on the spread of ENR technologies from 1939 to 2012 in the Nuclear Latency (NL) Dataset. Often overlooked, the two scholars argue that nuclear latency significantly affects international conflict dynamics and investigate whether its role in deterrence could be similar to that of nuclear weapons.

The most common method for enriching uranium, gas centrifuge enrichment, poses in itself significant proliferation risks, as it employs almost the same technology used to produce weapons-grade uranium. Uranium with a uranium-235 concentration between 0.7% and 20% is classified as low enriched uranium (LEU), with most civilian

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[164] During the 9th Plenary Session of the 8th Central Committee of the Workers' Party of Korea (WPK) in December 2023, North Korean leader Kim Jong Un announced the "Two Hostile States" doctrine, a stance he reaffirmed in his New Year's policy address to the Supreme People's Assembly in January 2024, signaling a break with Kim Il Sung and Kim Jong Il. For the cognitive rationale behind the sudden change, see Ildo Hwang, "*Revisiting North Korea's "Two Hostile States" Doctrine: Based on the Kim Il Sung Text*," IP2024-12E (Seoul: Institute of Foreign Affairs and National Security, November 6, 2024).

[165] Matthew Fuhrmann and Benjamin Tkach, "Almost Nuclear: Introducing the Nuclear Latency Dataset," *Conflict Management and Peace Science* 32, 4 (September 2015): 443–61.

and commercial nuclear reactors utilizing LEU enriched to approximately 3–5% uranium-235. In contrast, uranium enriched to over 20% uranium-235 is considered highly enriched uranium (HEU).[166] While all HEU is weapons-usable, achieving a critical mass—the minimum amount needed to construct a nuclear weapon—requires larger quantities of material at lower enrichment levels.[167] Uranium enrichment presents a proliferation risk because the technology used to produce LEU for reactor fuel can also be applied to generate HEU suitable for nuclear weapons.

Although legal restrictions exist to prevent such activities, there are no technical barriers that stop countries with enrichment capabilities from increasing uranium enrichment to weapons-grade levels. Among the various enrichment methods, centrifuges pose a unique proliferation risk due to the difficulty of detecting cover facilities in a timely manner.[168] If a country chooses to pursue a nuclear program, the theoretical amount of time required to reconfigure the centrifuge to produce HEU is known as breakout time. It is estimated that South Korea has a breakout time of two to three years.[169]

An emerging concern related to uranium is the production and supply of High-Assay Low-Enriched Uranium (HALEU), which refers to uranium that has been enriched to levels between 5% and 20% uranium-235, positioning it between

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[166] "Uranium Enrichment," *World Nuclear Organization*, updated November 19, 2024, https://world-nuclear.org/information-library/nuclear-fuel-cycle/conversion-enrichment-and-fabrication/uranium-enrichment.

[167] Nuclear Threat Initiative (NTI), *Uranium Enrichment*, accessed January 25, 2025, https://tutorials.nti.org/nuclear-101/uranium-enrichment/.

[168] Ibid.

[169] Rachel Oswald, "If It Wanted, South Korea Could Build Its Own Bomb," *Pulitzer Center*, April 11, 2018, https://pulitzercenter.org/stories/if-it-wanted-south-korea-could-build-its-own-bomb.

traditional LEU and HEU. This material is primarily intended for use in advanced nuclear reactors, particularly the next generation of small modular reactors (SMRs) and other innovative fuel cycle concepts.[170] While offering enhanced efficiency and performance, HALEU's higher enrichment level also raises proliferation concerns, as it reduces the technical barriers for potential diversion toward weapons-related activities compared to standard LEU. On one hand, it can increase the risk of diversion due to its potential use as feedstock for further enrichment to weapons-grade HEU, and, on the other, the higher residual enrichment in spent HALEU creates economic incentives for reprocessing, further exacerbating proliferation risks.[171]

In contrast, plutonium reprocessing technologies such as Plutonium Uranium Redox Extraction (PUREX) and pyroprocessing pose distinct proliferation risks. While plutonium reprocessing requires technical expertise and specialized equipment, it is generally less technically challenging than uranium enrichment, thus presenting both environmental and proliferation risks.[172] For instance, North Korea's illegal nuclear program began with the construction of a 5 MWe experimental reactor at Yongbyon, designed to produce weapons-grade plutonium.[173] Aside from the five recognized nuclear-weapon states, and the four nuclear-armed states outside the Non-Proliferation

[170] John Carlson, "HALEU: Some Safeguards and Non-Proliferation Implications," *VCDNP*, August 8, 2024, 1, https://vcdnp.org/wp-content/uploads/2024/09/HALEU-Some-Safeguards-Implications.pdf.

[171] Ibid, 1-2.

[172] Nuclear Threat Initiative (NTI), *Reactors & Plutonium*, accessed January 26, 2025, https://tutorials.nti.org/nuclear-101/reactors-plutonium/.

[173] Daniel Wertz, Matthew McGrath, and Scott LaFoy, *North Korea's Nuclear Weapons Program, National Committee on North Korea*, April 2018, updated by Ankit Panda in August 2023, https://www.ncnk.org/resources/briefing-papers/all-briefing-papers/north-koreas-nuclear-weapons-program.

Treaty, Japan is the only non-nuclear-weapon state with an active plutonium reprocessing program.[174]

While pyroprocessing was initially considered more proliferation-resistant because it does not produce pure plutonium, experts now agree that the risks are only partially mitigated.[175] U.S. officials have explicitly stated that pyroprocessing poses proliferation risks comparable to conventional reprocessing.[176] Given their dual-use potential, these technologies must be subject to rigorous international monitoring. The safeguards system under the International Atomic Energy Agency (IAEA) and preventive mechanisms from organizations such as the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) are designed to prevent the diversion of these technologies and materials for non-peaceful purposes.

Since latent capabilities signal the potential for rapid nuclear breakout, they can functionally serve as a de facto weapons program. As such, they have been analyzed both as a deterrent—based on the fear of potential nuclear retaliation—and as a possible incentive for preventive military action due to the perceived emboldenment of the

[174] In the Japanese reprocessing plant at Rokkasho, plutonium is coprecipitated with uranium to avoid the separation of pure plutonium. In IAEA, *Development of Advanced Reprocessing Technologies*, 3, accessed January 26, 2025, https://www.iaea.org/sites/default/files/gc/gc52inf-3-att4_en.pdf.

[175] Miles A. Pomper and Yanliang Pan, "Nuclear energy could power the AI boom-but only if the proliferation risks are minimized," *Bulletin of the Atomic Scientists*, July 1, 2024, https://thebulletin.org/2024/07/nuclear-energy-could-power-the-ai-boom-but-only-if-proliferation-risks-are-minimized/.

[176] Daniel Horner, "Pyroprocessing Is Reprocessing: U.S. Official," *Arms Control Association*, April 4, 2011, https://www.armscontrol.org/act/2011-04/pyroprocessing-reprocessing-us-official.

latent state.[177] Latency further correlates with reduced U.S. military assistance and increased susceptibility to economic sanctions, indicating complex security and economic trade-offs for latent states.

Using the NL framework, Mehta and Whitlark investigated how nuclear latency affects a state's military security, bargaining power, and overall position in international relations. The authors contrast two competing theories: Virtual Deterrence Theory and Latency Provocation Theory.[178] The former argues that nuclear latency acts as a virtual deterrent, offering strategic leverage similar to possessing actual nuclear weapons, while the latter asserts that latency can further provoke military threats, economic sanctions, and diplomatic isolation without delivering effective deterrence. Their findings suggest that nuclear latency often invites coercion without offering credible deterrent advantages, challenging the assumption that latent nuclear capabilities inherently enhance national security.[179]

Specifically, Mehta and Whitlark found that U.S. allies with nuclear latency face stricter sanctions and reductions in military aid, consistent with U.S. nonproliferation efforts.[180] Therefore, while some countries may pursue nuclear

[177] Ibid.

[178] Rachel E. Whitlark and Rupal N. Mehta, "Hedging Our Bets: Why Does Nuclear Latency Matter?," *Washington Quarterly* 42, no. 1 (Spring 2019): 43.

[179] Ibid, 41-52.

[180] The article by Metha and Whitlark is from 2019, which is six years before the time of writing. As the Bulletin of Atomic Scientists 2025 Prediction has noted, the United States in 2024 has initiated the world's costliest nuclear modernization program and cannot be considered a leader in efforts to prevent the use of nuclear weapons, mitigate nuclear risks, and promote arsenal reductions as it historically did during the Cold War and until the 2010s, in John Mecklin, "Closer than ever: It is now 89 seconds to midnight. 2025 Doomsday Clock

latency as a bargaining tool, this strategy can inadvertently increase instability by provoking preventive actions and diplomatic tensions, ultimately undermining global nonproliferation efforts. Nevertheless, as it will be discussed in the following sections, direct nuclear armament is a highly costly strategy. Thus, nuclear latency appears to be a safer hedging option for states that, as Narang argues, do not intend to pursue an overt nuclear weapons program but still wish to maintain the option for potential proliferation.

The core issue with nuclear latency as a proliferation strategy lies in the dual-use nature of nuclear materials and technologies. Scholars have sought to measure the proliferation risks of peaceful nuclear programs to address the "Nth country problem," which aims to predict which country might be the next to acquire nuclear weapons. Stephen Herzog introduced the concept of the "proliferation danger zone," arguing that states pass through a critical phase during the development of civilian nuclear infrastructure where the risk of proliferation is highest.[181] Below this threshold, states lack the technical capacity to proliferate, while those that surpass it without pursuing nuclear weapons are unlikely to do so in the future.

To support this analysis, Herzog developed the Nuclear Fuel Cycle (NFC) Index, a tool designed to complement political assessments of proliferation risks. According to this index, states scoring between 4.4 and 6.5 are most likely to pursue nuclear weapons. In Herzog's framework, countries like South Korea, Japan, Brazil, and Argentina are classified as "norm embracers," having advanced beyond the proliferation danger zone without acquiring nuclear weapons. However, South Korea remains within the danger zone, with strong domestic support for nuclear armament.

Statement," *Bulletin of the Atomic Scientists*, January 28, 2025, https://thebulletin.org/doomsday-clock/2025-statement/.

[181] Stephen Herzog, "The Nuclear Fuel Cycle and the Proliferation "Danger Zone"," *Journal for Peace and Nuclear Disarmament* 3, 1 (2020): 60-86.

Herzog calls for sustained U.S. efforts to reassure South Korea in order to prevent a potential proliferation crisis. He also notes that these findings are "conditional upon the continuation of strong nonproliferation norms and the absence of dramatic geopolitical shifts."[182]

Severe damages to the security environment, such as losing the protection of a nuclear-armed patron state, make the picture less clear on whether the "deterrent or compellent value of a latent "virtual arsenal" in the form of threshold state status would be sufficient to encourage nuclear forbearance."[183]

In the case of South Korea, the country exhibits clear indicators of nuclear latency through its continued pursuit of advanced nuclear technologies. If Narang's framework needs to be applied, the country has pursued distinct strategies among two types of hedging. The dissertation argues that Seoul has, at different times, strived to be a technical hedger, most notably, for sustained research into pyroprocessing, a reprocessing method that, despite claims of proliferation resistance, carries significant dual-use risks. Moreover, South Korea has previously conducted uranium enrichment activities beyond internationally permitted standards,[184] raising concerns about its latent capabilities.

For these secret experiments and the technical capabilities, it has assembled and keeps attempting, Seoul has also shown insurance hedger behavior. Most recently, South Korea finalized an agreement for the acquisition of High-Assay Low-Enriched Uranium (HALEU), which further reduces the technical barriers for potential

[182] Ibid, 77-78.

[183] Ibid, 78.

[184] South Korea revealed the experiment after ratifying the Additional Protocol to its IAEA safeguards regime in 2004. This attempt will be discussed thoroughly in Chapter II.

proliferation.[185] These developments underscore South Korea's strategic positioning within the nuclear latency spectrum, reflecting both its advanced nuclear infrastructure and the latent potential to pivot toward weapons development if circumstances were to require it.

1.4 The Strategic, Economic, and Political Costs of Proliferation

Developing nuclear weapons is a highly complex and resource-intensive process that requires substantial financial investment, technical expertise, and specialized infrastructure. While the barriers to proliferation are significant, they are not insurmountable, and historically, multiple states have demonstrated the capability to develop nuclear weapons under the right conditions. The process can be broken down into four critical stages: acquiring fissile material, weapon fabrication, testing, and the development of reliable delivery systems.[186]

The most formidable barrier to nuclear weapons development is the procurement of fissile material, which serves as the core of a nuclear device. States must either enrich uranium to weapons-grade levels, reprocess plutonium from spent nuclear fuel, or acquire these materials through illicit means.[187] The technological and regulatory constraints imposed by international safeguards, such as those of the IAEA, make this step particularly challenging. However, for countries that already possess

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[185] Korea Hydro & Nuclear Power (KHNP) agreed with nuclear fuel supplier Centrus Energy to receive enriched uranium from the American firm for the next 10 years to secure fuel for its present and future facilities. KHNP said that under the deal, Centrus Energy will supply HALEU to KHNP. In Dong-hwan Ko, "Centrus to supply enriched uranium to KHNP for next decade," *The Korea Times*, February 6, 2025, https://www.koreatimes.co.kr/www/tech/2025/02/129_391663.html.

[186] Nuclear Threat Initiative (NTI), *Nuclear Weapons*, updated 2023, https://tutorials.nti.org/nuclear-101/nuclear-weapons/.

[187] Ibid.

fissile materials for civilian programs under the IAEA safeguards, this step can be overcome.

Once fissile material is acquired, the next stage involves designing and assembling a functional nuclear device. This requires expertise across multiple disciplines, including physics, metallurgy, chemistry, and explosives engineering. Although many of the theoretical principles underlying nuclear weapons design are publicly available, the fabrication of a functional weapon demands access to specialized, often dual-use, manufacturing technologies. Modern advancements in computing, particularly in high-performance simulations, have further facilitated the design and refinement of nuclear weapons, enabling proliferators to overcome some of the challenges faced by earlier nuclear states.[188]

A third step involving nuclear testing, which has historically played a crucial role in validating the effectiveness and reliability of nuclear weapon designs. While basic designs, such as gun-type fission weapons, may not require testing for functionality, more advanced and compact designs, particularly implosion-based or thermonuclear weapons, necessitate extensive testing.[189] Most nuclear-armed states have conducted multiple nuclear tests, although the CTBTO's International Monitoring System has made clandestine testing increasingly difficult.[190] Despite the widespread adoption of testing moratoria, countries seeking to develop miniaturized or highly sophisticated nuclear weapons would still require some form of testing to ensure operational reliability.

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[188] Ibid.

[189] Ibid.

[190] CTBTO Preparatory Commission, "The International Monitoring System," accessed February 7, 2025, https://www.ctbto.org/our-work/international-monitoring-system.

Lastly, the effectiveness of nuclear arsenal depends significantly on a state's ability to deploy and deliver nuclear warheads.[191] Modern nuclear-capable states prioritize aerial and missile-based delivery systems due to their speed, range, payload capacity, and ability to evade defensive systems. The miniaturization of warheads to fit ballistic missile platforms presents one of the greatest technical challenges for aspiring nuclear states, necessitating extensive research, testing, and manufacturing precision. States that already possess advanced conventional or dual-use delivery systems may be facilitated in their strategic options.[192]

While the proliferation of nuclear weapons remains constrained by significant technological and geopolitical obstacles, advancements in dual-use technologies, and the evolving security landscape continue to pose challenges to global nonproliferation efforts. However, not only is proliferation difficult per se, but it is a highly costly strategy, and few states have chosen to pursue such a path, particularly after the entry into force of the NPT in 1970. While the NPT recognizes five nuclear-weapon states,[193] the other four, India, Pakistan, Israel, and North Korea are nuclear-armed states not recognized by the regime. The first three countries have neither signed nor ratified the NPT, while the DPRK is the only country that was formerly part of the NPT and successively withdrew in 2004.[194]

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[191] NTI, "Nuclear Weapons."

[192] Ibid.

[193] Art. IX of the NPT recognizes a nuclear-weapon State as one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967. In United Nations Office for Disarmament Affairs (UNODA), *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*, accessed February 7, 2025, https://disarmament.unoda.org/wmd/nuclear/npt/text/.

[194] IAEA, "Fact Sheet on DPRK Nuclear Safeguards," accessed February 7, 2025, https://www.iaea.org/newscenter/focus/dprk/fact-sheet-on-dprk-nuclear-safeguards.

If a state that is a party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) decides to pursue a nuclear weapons program, it would be required to follow the precedent set by North Korea and formally withdraw from the treaty before developing a nuclear capability. Furthermore, if the state is also a signatory to the Treaty on the Prohibition of Nuclear Weapons (TPNW), or any other nonproliferation and disarmament agreements, it would need to undertake equivalent withdrawal procedures in accordance with the provisions of those treaties.

Any decision by a state to withdraw from the NPT would be met with grave concern by the international community, as the only precedent is North Korea's withdrawal in 2004. The DPRK stands as an outlier, having not only exited the NPT but also consistently violated the few disarmament agreements to which it remains a party. A similar move by another state would likely provoke an immediate and coordinated international response. Historical experience suggests that efforts to dissuade the state from completing its nuclear weapons program would swiftly follow, both through multilateral channels and bilateral diplomatic engagements. For instance, following North Korea's nuclear developments in the early 1990s, the United States and the DPRK signed the Agreed Framework in 1994, under which Pyongyang agreed to freeze its nuclear program in exchange for energy assistance and normalization talks.[195]

However, such initiatives are often accompanied by punitive measures. Withdrawal from the NPT would likely prompt widespread diplomatic condemnation, the imposition of severe economic sanctions, and the termination of preferential trade agreements. The case of Iran, though it did not withdraw from the NPT, demonstrates

[195] Daryl Kimball and Shannon Bugos, "U.S.-North Korean Agreed Framework at a Glance," *Arms Control Association*, July 2023, https://www.armscontrol.org/factsheets/us-north-korean-agreed-framework-glance.

how mere suspicion of nuclear weapons ambitions can lead to crippling sanctions,[196] cutting off access to global financial systems and reducing oil exports. For a highly integrated economy, such as South Korea or Japan, comparable sanctions and exclusion from international supply chains could trigger profound economic and political instability, raising concerns over survivability.

If the proliferating state is a member of the Nuclear Suppliers Group (NSG) or heavily relies on civil nuclear energy, its pursuit of nuclear weapons would likely result in expulsion from the NSG and a comprehensive severance from global nuclear supply chains. The NSG, established to prevent nuclear technology from contributing to weapons programs, operates on the principle of denying exports to states that violate nonproliferation norms. Withdrawal or expulsion from this group would terminate access to nuclear materials, reactor components, and fuel cycle technologies, crippling the state's civilian nuclear energy sector.[197]

Moreover, nuclear supplier states—including key exporters like the United States, France, and Russia—would likely suspend bilateral nuclear cooperation agreements (e.g., South Korea's 123 Agreements with the U.S.), and fuel supply contracts under the IAEA's Safeguards Agreements would be revoked. Countries with pressurized water reactors (PWRs) or other imported nuclear reactor designs, would

[196] Despite Iran's formal adherence to the Nuclear Non-Proliferation Treaty (NPT), suspicions regarding its nuclear ambitions have led to an IAEA's investigation under the Safeguards Agreement and significant international sanctions in 2010, in Michael Adler, "Iran and the IAEA," *The Iran Primer*, May 30, 2024, https://iranprimer.usip.org/resource/iran-and-iaea.

[197] Daryl G. Kimball, "How NSG States Can Help Avert a Nonproliferation Disaster," May 13, 2008, https://www.armscontrol.org/events/2008-05/nsg-states-help-avert-nonproliferation-disaster.

face an acute energy crisis if their nuclear reactors were dependent on imported uranium enrichment services or reactor fuel assemblies.

The precedent of Iran following the revelations of its covert nuclear activities illustrates the potential severity of such sanctions: Russia briefly suspended fuel deliveries for the Bushehr reactor,[198] while the European Union and other suppliers halted nuclear technology transfers.[199] Similarly, India's nuclear isolation following its 1974 nuclear test resulted in a decades-long embargo on nuclear technology and fuel imports, severely impeding its civilian nuclear program until the U.S.-India nuclear deal in 2008 partially normalized its status.[200] Thus, for states with substantial reliance on nuclear power, cutting off nuclear fuel supply and technological cooperation would not merely be punitive—it could jeopardize energy security, cripple electricity production, and generate domestic instability, amplifying the economic and political costs of nuclear breakout.

Beyond international repercussions, a junior ally's pursuit of nuclear weapons would likely provoke severe consequences within the alliance framework. Foremost, it could trigger the risk of abandonment by the senior ally, as the proliferation decision would fundamentally undermine the trust and cooperative foundation underpinning the security relationship. This could lead to a strategic rupture, with the senior partner reassessing its defense commitments or withdrawing security guarantees altogether—

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[198] Reuters, "U.S. sees important signal in Russia move," August 9, 2007, https://www.reuters.com/article/world/u-s-sees-important-signal-in-russia-move-idUSN21381032/.

[199] Semira N. Nikou, "Timeline of Iran's Nuclear Activities," *The Iran Primer*, August 17, 2021, https://iranprimer.usip.org/resource/timeline-irans-nuclear-activities.

[200] Jayshree Bajoria and Esther Pan, "The U.S.-India Nuclear Deal," *Council on Foreign Relations* [Backgrounder], updated November 5, 2010, https://www.cfr.org/backgrounder/us-india-nuclear-deal.

an outcome often perceived as the most destabilizing and undesirable scenario for junior allies. Alternatively, the senior ally might opt for punitive measures short of full abandonment, ranging from reductions in military aid and the suspension of joint defense initiatives to the imposition of diplomatic or economic penalties.

Additionally, a junior ally's nuclear breakout could provoke a chain reaction among other allied states, prompting them to consider similar proliferation pathways. This domino effect would not only erode alliance cohesion but also escalate regional security dilemmas,[201] fueling arms races and heightening the risk of crisis instability. As Lanoszka has observed, alliances are intended not merely to extend deterrence but also to prevent allies from seeking independent nuclear capabilities. Should the senior ally fail to respond decisively to a junior ally's nuclearization, it would signal permissiveness, encouraging other states under the same security umbrella to question the credibility of extended deterrence and contemplate independent nuclear options. This could lead to a permanent unraveling of the alliance system, ushering in escalatory cycles of mistrust and militarization with no clear pathway for de-escalation.

The spectrum of nuclear behavior ultimately reflects the underlying tension between a junior ally's reliance on the senior partner for security and its desire for nuclear autonomy. Junior allies continuously navigate this continuum, adjusting their position based on shifting perceptions of alliance credibility, evolving regional threats, and domestic political pressures. These strategic recalibrations demonstrate that proliferation is rarely a linear progression but rather a dynamic process shaped by the intersection of alliance politics and national security concerns. The next chapters will apply this framework to the case of South Korea, tracing how Seoul has moved along this proliferation spectrum in response to specific episodes of alliance strain and

[201] Rebecca L. Heinrichs, "Nonproliferation in Great Power Competition," *Hudson Institute*, February 24, 2025, https://www.hudson.org/arms-control-nonproliferation/nonproliferation-great-power-competition-rebeccah-heinrichs.

heightened regional insecurity, offering empirical insight into the complex interplay between nuclear ambitions and alliance commitments.

CHAPTER II

TRACING SOUTH KOREA'S NUCLEAR TRAJECTORY: FROM PAST COVERT AMBITIONS TO CURRENT LIMITATIONS OF ALLIANCE DETERRENCE

This chapter examines South Korea's nuclear ambitions and its evolving proliferation behavior within the broader context of alliance politics and regional insecurity. Firstly, it focuses on the historical episode of President Park Chung-hee's covert nuclear weapons program in the 1970s, analyzing the underlying security concerns and alliance strains that drove Seoul's pursuit of an independent nuclear deterrent. Secondly, the chapter then situates this episode within South Korea's broader engagement with the global nonproliferation regime through the decades, highlighting the country's complex relationship with nuclear technology as both a civilian energy leader and a latent nuclear state.

Thirdly, it will analyze the proposal of a Nuclear Weapons Free Zone in North East Asia, and how this ultimately contrasted with the nuclear weapons program initiated by North Korea, and the subsequent attempts at the denuclearization of the Peninsula. Finally, the last three paragraphs will focus on the conventional strategy that South Korea employs to defend itself against the threat posed by the North, which alliance defense mechanisms it can draw upon, and why they have been perceived as not enough.

This contextual analysis is essential to understanding contemporary South Korean nuclear behavior, including its continued interest in nuclear latency and recurring public support for nuclear armament. Without such a historical and

institutional foundation, it would be difficult to grasp the strategic calculations underlying South Korea's hedging behavior and its oscillation between reliance on the U.S. nuclear umbrella and desires for greater nuclear autonomy—developments that will be explored in the following chapter.

2.1 Park Chung-hee's 1970s Covert Nuclear Program

South Korea attempted to pursue a covert nuclear weapons program in the 1970s, initiated under President Park Chung-hee, second leader-dictator of the country since the end of the Korean War.[202] Declassified documents and testimonies from individuals "in the know" reveal that Park had assembled a group of scientists—reportedly numbering up to 870 by the late 1970s—and directed them to develop nuclear weapons by 1977.[203] This episode is crucial for understanding the origins of South Korea's nuclear hedging behavior.

In response to growing concerns over South Korea's vulnerability due to uncertainty about the future of U.S. military support, Park Chung-hee tasked O Won-chol, a senior official appointed to oversee defense-related heavy and chemical industries, with exploring the feasibility of developing nuclear weapons.[204] Thus, South Korea began feasibility studies into nuclear weapons development in 1970, and by 1972, it had formally dedicated resources to the project. The initiative, known as

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[202] For a deeper understanding of South Korea under the Presidency of Park Chung-hee, see Carter J. Eckert, "Park Chung-hee and Modern Korea: The Roots of Militarism, 1866-1945," 2016, Harvard University Press and "The Park Chung-hee Era: Transformation of South Korea" edited by Byung-Kook Kim and Ezra Vogel, 2011, Harvard University Press.

[203] Sun-young Lee, "[Korean History] Nuclear weapons and South Korea."

[204] O Won-chol served as senior presidential secretary for economic affairs for eight years in the 1970s, in Hyung Kyung Kang, "Ex-presidential aide spearheaded shift to capital-intensive industry," *The Korea Herald*, November 16, 2015, https://www.koreatimes.co.kr/www/nation/2025/02/113_191065.html.

Project 890, was conducted under the guise of peaceful nuclear energy development but had clear military objectives.[205] With this aim in mind, the South Korean government established two key defense agencies, the Agency for Defense Development (ADD),[206] tasked to begin research into nuclear weapons design, delivery systems, and detonation technologies, and the Weapons Exploitation Committee (WEC), which was later dissolved, to explore indigenous nuclear weapons production and light water reactor acquisition.

Motivated by fears of abandonment following the Nixon Doctrine and the U.S. withdrawal from Vietnam,[207] Park saw nuclear weapons as a means to ensure South Korea's security and reduce dependence on American defense guarantees,[208] Park aimed to bolster South Korea's security and reduce reliance on American defense guarantees. This pursuit was driven primarily by concerns over the reliability of the U.S. security commitment, particularly after the U.S. unilaterally withdrew the 7th Infantry Division from South Korea in 1971 despite his objections.[209] Moreover, Park

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[205] Sung Gul Hong, "The Search for Deterrence: Park's Nuclear Option," in Byung-Kook Kim and Ezra F. Vogel (eds.), *The Park Chung Hee Era: The Transformation of South Korea* (Cambridge, MA: Harvard University Press, 2011), 483-513.

[206] The Agency was established by Park's presidential decree in June 1970 and is still active as the leading defense R&D center and is responsible for the planning and conduct of all defense acquisition for the Republic of Korea as "the cornerstone of [South Korean] national defense," including its missile development programs, in ADD, History, accessed February 20, 2025, https://www.add.re.kr/board?menuId=MENU02259&siteId=null.

[207] The Nixon Doctrine, articulated in 1969, signaled a strategic shift in U.S. foreign policy, emphasizing that allied nations should take primary responsibility for their own defense.

[208] Sung Gul Hong, "The Search for Deterrence," 485.

[209] In 1971, the United States withdrew the 7th Infantry Division from South Korea, reducing U.S. troop levels from approximately 63,000 to 43,000. This move was seen by Park as a sign of weakening U.S. resolve. In Larry Niksch, "Special Report: Potential Sources of Opposition

suspected that the U.S., after its Vietnam debacle, might avoid military intervention, leaving South Korea vulnerable. Consequently, Park considered a rudimentary nuclear deterrent as a means to prevent both a total and a limited North Korean attack by instilling fear of nuclear escalation.[210] Park viewed nuclear weapons as a means to ensure national security and reduce dependence on the United States.

Concurrently, during Park Chung-hee's presidency, particularly in the late 1960s and 1970s, the threat posed by North Korea increased fear for security in the South. Park viewed North Korea's provocations as part of a broader "low-intensity conflict strategy" aimed at destabilizing the South and testing U.S. resolve.[211] Indeed, during those years the DPRK showcased aggressive and unpredictable behavior, escalating military provocations on several occasions. In 1968, a North Korean commando unit infiltrated Seoul through its Northern door in an attempt to assassinate President Park Chung-hee, in what is known as the 'Blue House Raid,' and successively captured the U.S. Navy intelligence ship USS Pueblo holding the crew hostage for almost a year.[212] Furthermore, the North was known to have a military capacity that far surpassed that of the South, and throughout the late 1960s, there was a sharp increase in border skirmishes along the Demilitarized Zone (DMZ).

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to a U.S. Troop Withdrawal from South Korea," *The National Committee on North Korea*, April 2019, https://www.ncnk.org/resources/briefing-papers/all-briefing-papers/special-report-potential-sources-opposition-u.s.

[210] This is not only because the U.S. defeat in the Vietnam War severely undermined the senior ally credibility among Asian allies, but also because South Korea during Park Chung-hee deployed approximately 320,000 troops to fight in Vietnam between 1964 and 1973 with the flawed expectation that such support would reinforce U.S. security commitments to Seoul.

[211] Sung Gul Hong, "The Search for Deterrence," 482.

[212] This event signaled to South Korea that the U.S. might not always respond forcefully to North Korean provocations.

Park, thus, advanced its policy of 'self-reliant national defense' (차주 국방) under the banner 'rich nation, strong army' (부국 강병), which signified a dual approach to development—pursuing economic growth and military strengthening in parallel. This policy framework further entrenched the perception of North Korea as a persistent and existential threat to South Korea's progress, as well as a rival that had to be outmatched.[213] However, South Korea's concerns over its international standing extended beyond its relationship with the North. The sense of being left behind was further exacerbated by the widening economic disparity with neighboring Japan, which was emerging as a regional power and possessed an advanced nuclear energy program.[214]

To circumvent U.S. opposition, South Korea through the Korea Atomic Energy Research Institute (KAERI) actively sought to acquire nuclear reprocessing and fuel fabrication technologies from foreign suppliers such as France and Belgium.[215] Although KAERI publicly framed its efforts as part of South Korea's peaceful nuclear energy development, U.S. intelligence assessed these moves—particularly the pursuit of reprocessing capabilities—as a clear proliferation risk. Further heightening U.S. concerns, South Korea procured a CANDU heavy-water reactor from Canada, breaking from its prior reliance on the U.S.-supplied light-water reactors. The shift in

[213] Sarah A. Son, "South Korean National Identity and Inter-Korean Relations since 1945," in *Routledge Handbook of Contemporary South Korea*, ed. Sojin Lim and N.J.P. Alsford (London: Routledge, 2021), 246–247.

[214] Peter Hayes and Chung-in Moon, "Park Chung Hee, the CIA, and the Bomb," *Nautilus Institute for Security and Sustainability*, August 25, 2017, https://nautilus.org/napsnet/napsnet-special-reports/park-chung-hee-the-cia-and-the-bomb/.

[215] By 1974, Seoul had secured agreements with France's Saint-Gobain Technique Nouvelle for a reprocessing facility design and Belgium's Belgonucléaire for mixed nuclear fuel fabrication facilities. In Lanoszka, *Atomic Assurances*, 114.

procurement strategy indicated a possible desire to develop a weapons program, as heavy-water reactors are more suitable for plutonium production.[216]

Although Park never openly admitted to pursuing nuclear weapons, it became increasingly evident that his objective was to obtain a nuclear capability. Ultimately, however, intense pressure from the United States, exercised through both bilateral diplomacy and multilateral nonproliferation efforts, forced Park to abandon his nuclear ambitions before they could come to fruition.[217] Ultimately, the Ford administration's discovery of Project 890 led to a coordinated U.S. pressure campaign leveraging South Korea's economic dependence and its reliance on U.S. nuclear technology, forcing Park to abandon his nuclear ambitions. These actions led to the official termination of the program in 1975, when U.S. Ambassador Richard Sneider and Assistant Secretary of State Philip Habib issued a stark ultimatum, threatening severe economic and security consequences if the nuclear program continued.[218] This included the potential cancellation of the Kori-2 reactor loan and reductions in military aid, accompanied by Seoul's decision to ratify the Nuclear Non-Proliferation Treaty (NPT). However, suspicions regarding South Korea's nuclear intentions persisted into the late 1970s and early 1980s.[219]

South Korea was found to have violated safeguard agreements by conducting plutonium research even after formally ending its nuclear weapons program.[220] Additionally, the Carter administration's (1977-1981) proposal for complete U.S. troop withdrawals reignited South Korean fears of abandonment. Ultimately, the

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[216] Sung Gul Hong, "The Search for Deterrence," 483-513.

[217] Ibid.

[218] Ibid.

[219] Ibid.

[220] Paul Kerr, "IAEA: Seoul's Nuclear Sins in Past," *Arms Control Association*, December 1, 2004, https://www.armscontrol.org/act/2004-12/iaea-seouls-nuclear-sins-past.

combination of U.S. diplomatic pressure, economic leverage, and security reassurances curtailed South Korea's nuclear ambitions during this period. However, the episode underscored the fragile nature of extended deterrence and set a precedent for South Korea's continued interest in nuclear latency as a strategic hedge. As Lanoszka has argued, the South Korean case illustrates how alliance credibility, rather than security threats and status seeking alone, determines nuclear proliferation decisions.[221]

2.2. South Korea's Integration into the Global Nonproliferation Regime

South Korea's nuclear ambitions have been shaped by historical anxieties, regional security threats, and evolving perceptions of the (un)reliability of U.S. extended deterrence. Nevertheless, after the covert attempt at developing nuclear weapons during the 1970s, with the transition to democratic government and consolidation of economic development in the late 1990s, Seoul had allegedly abandoned nuclear weapons ambitions.[222] The evolution of South Korea's nuclear policy, from a covert program to active engagement in peaceful nuclear energy, underscores a norm-embracing tendency but also the desire for potential latent capabilities.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the starting point and the cornerstone of the international non-proliferation regime, which was signed in 1968 and entered into force on March 5, 1970.[223] The NPT is based on three pillars, namely non-proliferation, disarmament, and peaceful use of nuclear energy.

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[221] Lanoszka, *Atomic Assurance*, 110-131.

[222] In 1991, President Roh Tae-woo declared the ROK to be nuclear weapon-free, in Sungyeol Choi and Il Soon Hwang, "Nonproliferation Drivers from Civil Nuclear Power: South Korea's External Constraints and Internal Beneficiaries," *Journal of Political & Military Sociology* 39 (2011): 89.

[223] In VCDNP, *The Nonproliferation Regime*.

According to these principles, the NPT regulates two different sets of obligations for non-nuclear weapon states (NNWS) and nuclear weapon states (NWS), which are defined in Art. III as states that have "manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January, 1967."[224] It then prohibits NNWS from seeking assistance for the manufacture, acquiring, or receiving nuclear weapons. It also obliges NNWS which intend to pursue a peaceful, civilian nuclear program, to follow the International Atomic Energy Agency safeguards system.[225] The five recognized nuclear powers -the US, the UK, France, Russia, and the PRC-, also referred to as the N5, are also required by the NPT not to transfer, assist, encourage or induce any NNWS to acquire or manufacture nuclear weapons, and to trade only for peaceful purposes under IAEA safeguards.[226]

The Republic of Korea started its nuclear path with its IAEA membership in 1958. It signed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1968, but did not ratify it until March 14, 1975, following the U.S. threats to withhold military support and suspend nuclear cooperation[227] after the discovery of the covert nuclear program. Joining the NPT allowed South Korea to gain access to nuclear technology and materials for its civilian nuclear energy program under the treaty's provisions for peaceful nuclear use.

For what concerns peaceful uses of the atom, South Korea began operating its first commercial nuclear power plant, Kori-1, which employed technical assistance from a U.S. company. During the 1980s and 1990s, South Korea expanded its nuclear

[224] See 194.

[225] See 151. United Nations Office for Disarmament Affairs, *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*.

[226] UNODA, *NPT*, Art. VI (1968).

[227] IAEA, "Republic of Korea," *IAEA Office of Legal Affairs*, accessed February 10, 2025, https://ola.iaea.org/Applications/FactSheets/Country/Detail?code=KR.

energy program with the construction of additional reactors, including Kori, Yonggwang (now Hanbit), Ulchin (now Hanul), and Wolsong plants.[228] South Korea further achieved significant technical independence with the design and development of its own reactor models. Among these, in the 2000s South Korean nuclear engineers uncovered the next-generation Advanced Power Reactors (APR-1400).[229] In December 2009, a consortium led by the Korea Electric Power Corporation (KEPCO) secured a landmark contract to design, build, and assist in operating four APR-1400 nuclear reactors at the Barakah site in the United Arab Emirates (UAE). The deal marked South Korea's emergence as a global exporter of nuclear technology.[230]

Nuclear power became a cornerstone of South Korea's energy policy, supplying approximately one third of the country's electricity (30.7%). The country operates a fleet of 26 nuclear reactor units, with 23 Pressurized Water Reactors (PWRs) and three Pressurized Heavy Water Reactors (PHWRs), representing 25.82 gigawatts (GW) of capacity at four nuclear power complexes representing 27.4% of all the reactors in the Asia Far East, according to the IAEA Power Reactor Information System.[231] Notwithstanding the Moon's administration nuclear phaseout policy (2017-2022) and the 2019 Third Energy Master Plan aimed at expanding the share of renewable energy sources, the number of power reactors increased with the resumption of construction of two additional PWRs. The following Yoon's administration (2022-

[228] World Nuclear Association, "Country Profile: Nuclear Power in South Korea," March 3, 2024, https://world-nuclear.org/information-library/country-profiles/countries-o-s/south-korea.

[229] Ibid.

[230] Bakr Amena and Mee-young Cho, "South Korea wins landmark Gulf nuclear power deal," *Reuters*, December 27, 2009, https://www.reuters.com/article/business/autos-transportation/south-korea-wins-landmark-gulf-nuclear-power-deal-idUSLDE5BQ05O/.

[231] IAEA, "Country Statistics," *Power Reactor Information System (PRIS)*, accessed August 26, 2024, https://pris.iaea.org/PRIS/CountryStatistics/CountryStatisticsLandingPage.aspx.

2024) has pledged to further implement the construction of additional reactors and reasserted the importance of nuclear power as an indispensable element for achieving energy security and industrial competitiveness and set a plan for nuclear to account for a minimum of 30% of the country's energy mix in 2030.[232]

Given the extensive development of nuclear infrastructure and technological expertise, South Korea has positioned itself as a highly capable and responsible member of the global nuclear community. The country is a major supplier of civilian nuclear expertise and technology particularly as a member of the Nuclear Suppliers Group (NSG), a multilateral export control regime aimed at preventing the proliferation of nuclear weapons through the regulation of nuclear-related exports.[233]

South Korea signed and became a party to the Additional Protocol (AP), an instrument that enhances the IAEA's ability to verify the peaceful use of nuclear material by granting broader access to information and nuclear sites which entered into force in February 2004.[234] The country is thus obliged to provide the IAEA with expanded information regarding its nuclear activities, including research and development related to the nuclear fuel cycle. The AP reinforces South Korea's commitment to nuclear transparency, especially given concerns over its past nuclear experiments and its advanced nuclear capabilities.

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[232] The plan is known as the 10th Basic Plan for Long-term Electricity Supply and Demand (BPE) presented in January 2023, which outlines energy targets until 2036. For a detailed explanation of South Korea's nuclear energy program, see 128.

[233] Nuclear Suppliers Group, "About us," accessed February 10, 2025, https://www.nuclearsuppliersgroup.org/index.php/en/about/about-the-nsg.

[234] The AP is a legal instrument that supplements a state's existing Comprehensive Safeguards Agreement with the IAEA. See IAEA, "GOV/2004/84: Implementation of the NPT Safeguards Agreement in the Republic of Korea," November 11, 2004, https://www.iaea.org/sites/default/files/documents/gov2004-84.pdf.

South Korea is also a party of almost all the primary treaties and conventions that regard nonproliferation and disarmament, such as the Comprehensive Test Ban Treaty (CTBT), the Chemical Weapons Convention (CWC), the Biological Weapons Convention (BWC), the Australia Group (AG), and the Global Initiative to Combat Nuclear Terrorism (GICNT).[235] However, the country is still not a party to the Treaty on the Prohibition of Nuclear Weapons (TPNW), entered into force in January 2021, which prohibits States Parties from developing, testing, producing, acquiring, possessing, or stockpiling nuclear weapons or other nuclear explosive devices and further forbids the Parties to station, install, or deploy nuclear weapons and other nuclear explosive devices in their territory.[236]

2.3 Nuclear Proliferation Behavior in South Korea

South Korea's advanced nuclear energy infrastructure positions it as a latent nuclear state, possessing significant technological capabilities to develop a nuclear program if it chooses so. This potential arises from the dual-use nature of nuclear technology, where facilities and expertise intended for civilian energy purposes can be repurposed for military applications. As it was stated before, experts estimate that South Korea would require at least two to three years to develop nuclear weapons, mainly due to fissile material production constraints.[237] To draw a comparison, Japan possesses over 45 tons of separated Plutonium, which would enable the country to go

[235] The GICNT is an international partnership intended to improve international capacity for prevention, detection, and response to nuclear terrorism, particularly the acquisition, transport, or use of nuclear and radiological materials.

[236] United Nations Office for Disarmament Affairs (UNODA), "Treaty on the Prohibition of Nuclear Weapons (TPNW)," 2017, https://disarmament.unoda.org/wmd/nuclear/tpnw/.

[237] See 170.

nuclear in a matter of months.[238] If South Korea were to acquire or implement ENR capabilities beyond permitted peaceful program levels and proceed with weapons-grade uranium enrichment or plutonium reprocessing technologies, the window from capability to weaponization could be reduced from years to a few months.[239]

Beyond security considerations, advocates for nuclear latency cite practical reasons to persuade Washington to consent to enrichment and reprocessing activities. One argument focuses on energy security. South Korea operates 26 nuclear power plants, generating roughly 30% of its electricity. Proponents argue that domestic enrichment capabilities are vital to reduce dependence on foreign suppliers. However, experts remain divided on economic viability and strategic rationale for acquiring such sensitive capabilities. Some argue that the costs and technical challenges associated with enrichment and reprocessing outweigh their potential benefits, particularly for states with reliable external fuel suppliers. Others contend that pursuing these capabilities could provoke international suspicion, strain diplomatic relationships, and undermine nonproliferation efforts, ultimately creating more security risks than advantages.[240]

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[238] Lami Kim, "South Korea's Nuclear Latency Dilemma," *War on the Rocks*, September 19, 2024, https://warontherocks.com/2024/09/south-koreas-nuclear-latency-dilemma/.

[239] Arguably, two nuclear engineering professors claimed South Korea could produce large numbers of nuclear weapons within 18 months using plutonium from spent reactor fuel, in Jungmin Kang, "A Nuclear South Korea Would Be a Mistake," *Bulletin of the Atomic Scientists*, April 1, 2016, https://thebulletin.org/2016/04/a-nuclear-south-korea-would-be-a-mistake/.

[240] Ibid.

Since the 1970s covert nuclear program, South Korea "has been intermittently interested in the reprocessing of nuclear power spent fuel."[241] This interest was motivated both by the global concerns about potential shortages of uranium and proposals by the U.S. to develop plutonium breeder reactors,[242] but it did also consider reprocessing as a route to nuclear weapons. The 1970s KAERI deals with Belgium regarding the acquisition of a mixed-oxide (MOX) fuel fabrication facility, the reactor deal with Canada and with France were all abandoned following U.S. intervention due to fears of South Korea developing a plutonium-reprocessing capability—as India did in 1974.[243]

Following South Korea's ratification of the Additional Protocol to its IAEA safeguards agreement in 2004, the government disclosed previously undeclared nuclear activities. Among these revelations, the Korea Atomic Energy Research Institute (KAERI) admitted to conducting an experiment in 1982 that resulted in the separation of 0.7 grams of plutonium. The IAEA's investigation into these activities began after plutonium particles were detected in a research reactor hot cell during inspections in 1997 and later in 2003.[244]

Moreover, the KAERI covertly carried out chemical uranium enrichment experiments between 1979 and 1981, the production of depleted uranium munitions between 1983 and 1987, and laser uranium enrichment tests in 2000.[245] They produced 200 milligrams of enriched uranium, with enrichment levels averaging 10 percent uranium-235, though some samples reached 77 percent—close to weapons-grade. This

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[241] Jungmin Jang and H.A. Feiveson, "South Korea's Shifting and Controversial Interest in Spent Fuel Reprocessing," *The Nonproliferation Review* 8, no. 1 (Spring 2001): 70.

[242] Ibid.

[243] Bajoria and Pan, "The U.S.-India Nuclear Deal."

[244] Paul Kerr, "IAEA: Seoul's Nuclear Sins in Past."

[245] Ibid. See also 235 and 240.

work was part of broader AVLIS (Atomic Vapor Laser Isotope Separation) research, which had begun in the 1960s and intensified in the 1990s. South Korea conducted several AVLIS uranium experiments between 1993 and 2000 but failed to declare these activities to the IAEA, violating its safeguards agreement.[246] South Korea's failure to report these activities to the IAEA constituted a breach of its safeguards obligations under the Nuclear Nonproliferation Treaty. Despite its formal adherence to nonproliferation norms, South Korea's nuclear activities throughout the 1980s and early 2000s—including undeclared plutonium separation and uranium enrichment experiments—demonstrate a recurring pattern of nuclear hedging behavior.

South Korea's nuclear ambitions have been constrained by the U.S.-ROK 123 Agreement, rooted in the 1954 U.S. Atomic Energy Act (AEA).[247] The AEA set up the Atomic Energy Commission (AEC) to foster the "utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public."[248] Section 123 of the AEA mandates the establishment of a peaceful nuclear cooperation agreement before any significant transfer of nuclear materials or technology from the U.S..[249] These agreements, known as "123 Agreements," served and continue to serve as a key

[246] Ibid.

[247] U.S. Congress, *Atomic Energy Act of 1954*, Public Law 83-703, 68 Stat. 919 (1954), https://www.govinfo.gov/content/pkg/COMPS-1630/pdf/COMPS-1630.pdf.

[248] U.S. Environmental Protection Agency, "Summary of the Atomic Energy Act," accessed February 12, 2025, https://www.epa.gov/laws-regulations/summary-atomic-energy-act.

[249] For a detailed explanation of the nine nonproliferation criteria entailed by the 123 Agreements see Daryl Kimball and Kingston Reif, "The U.S. Atomic Energy Act Section 123 At a Glance," *Arms Control Association*, September 2023, https://www.armscontrol.org/factsheets/us-atomic-energy-act-section-123-glance.

nonproliferation tool in Washington's foreign policy,[250] enabling nuclear cooperation while ensuring safeguards and adherence to U.S. nonproliferation principles. As of December 2024, the United States maintained 25 such agreements with 49 countries.[251]

The 1974 U.S.-ROK 123 Agreement prohibited the enrichment or reprocessing of the U.S.-originated nuclear materials without explicit U.S. consent, but did not ban any such development with material that was not supplied by Washington. After years of negotiations, the agreement, which many experts deemed controversial, was revised in 2015 to last until 2040, and introduced new provisions on ENR capabilities, the most sensitive technologies in the fuel cycle. First, it allows South Korea to operate the Advanced Spent Fuel Conditioning Process Facility (ACPF), which is employed for the initial phase of pyroprocessing technology used to convert spent fuel from oxide to metal without separating plutonium. The U.S. and ROK already agreed to a 10-year Joint Fuel Cycle Study on plutonium pyroprocessing, which South Korea pioneered, in 2011.[252] Second, for the first time, South Korea was allowed to enrich uranium up to 20% uranium-235, only under U.S. consent and following consultations through a

[250] U.S. Department of State, "123 Agreements," [factsheet], accessed February 12, 2025, https://www.state.gov/bureau-of-international-security-and-nonproliferation/releases/2025/01/123-agreements.

[251] U.S. Department of Energy, "123 Agreements for Peaceful Cooperation," updated on December 12, 2024. https://www.energy.gov/nnsa/123-agreements-peaceful-cooperation.

[252] Pyroprocessing allegedly responds to the ROK's issue of spent fuel storage, which has become problematic due to the limits in additional storage capacity. Pyroprocessing will allow for spent fuel management and allegedly solve the problem, in Ferenc Dalnoki-Veress and Miles A. Pomper, "Dealing With South Korea's Spent Fuel Challenges Without Pyroprocessing," *Arms Control Association*, July 2, 2013, https://www.armscontrol.org/act/2013-07/features/dealing-south-koreas-spent-fuel-challenges-without-pyroprocessing.

newly established bilateral commission.[253] Lastly, it established pathways for future discussions on ENR through the High-Level Bilateral Commission (HLBC).

Moreover, the country possesses ballistic and cruise missile development programs, among which the Hyunmoo missile family exemplifies South Korean indigenous development efforts. In 2024, South Korea unveiled its most powerful system to date, the Hyunmoo-5, capable of targeting subterranean bunkers across the region.[254] Once regulated by U.S impositions, the ballistic missile range restriction (800 km) was ultimately lifted in 2021.[255] In 2022, South Korea announced the development of its first long-range air-launched cruise missile, aiming to bolster its aerial strike proficiency.[256] Finally, South Korea is the only non-nuclear weapon state with submarine-launched ballistic missiles capability.[257]

South Korea had pushed for the inclusion of rights to enrich uranium and reprocess spent fuel through pyroprocessing, while the U.S. resisted due to

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[253] Ibid.

[254] Hyung-jin Kim, "South Korea unveils its most powerful missile, which could reach North Korea's underground bunkers," *AP*, October 1, 2024, https://apnews.com/article/south-korea-missile-north-nuclear-7f2f8774b8ebbe697e611b14c06c1de5.

[255] This agreement was reached by South Korean President Moon Jae-in and U.S. President Joe Biden during a bilateral summit in Washington, D.C, and terminated the U.S.-ROK Missile Guidelines that governed South Korea's missile capabilities since 1979, in Sang-min Kim, "U.S. Lifts Missile Limits on South Korea," *Arms Control Association*, June 2021, https://www.armscontrol.org/act/2021-06/news/us-lifts-missile-limits-south-korea.

[256] Inder Singh Bisht, "South Korea Announces Air-Launched Cruise Missile Program," *The Defense Post*, December 13, 2022, https://thedefensepost.com/2022/12/13/south-korea-air-launched-cruise-missile/.

[257] Kelsey Davenport, "South Korea Tests Submarine-Launched Missile," *Arms Control Association*, October 2021, https://www.armscontrol.org/act/2021-10/news/south-korea-tests-submarine-launched-missile.

nonproliferation concerns, since it has refrained from allowing countries that did not already possess the capabilities to enrich or reprocess its fuel. Moreover, since the signing of the 1992 Joint Declaration with North Korea, South Korea did not acquire such facilities in order to facilitate negotiation for the denuclearization of the Korean Peninsula. The 2015 Agreement can lessen the threshold for potential negotiations with Pyongyang, and "create a precedent that other states may seek to follow."[258]

Advocates for nuclear latency argue that the 123 Agreement should be renegotiated and is likely to be done in 5 to 10 years.[259] However, the U.S. remains cautious, given South Korea's history of clandestine nuclear experiments and the explicit acknowledgment by South Korean elites of nuclear latency as a potential precursor to weaponization. "For a country that has a record of secret nuclear programs, South Korea should understand how long it takes to build up credibility—and how easily it can be lost."[260]

2.4 A Nuclear Weapons Free Zone in Northeast Asia and the Denuclearization of the Korean Peninsula

Discussions about establishing a Nuclear Weapons Free Zone (NWFZ)[261] in Northeast Asia, which would prohibit the development, possession, and deployment of

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[258] Sharon Squassoni, "U.S.–South Korean Peaceful Nuclear Cooperation Agreement," *CSIS*, October 2, 2015, https://www.csis.org/analysis/us-south-korean-peaceful-nuclear-cooperation-agreement.

[259] Ibid.

[260] Kang, "A Nuclear South Korea Would Be a Mistake."

[261] "General Assembly resolution 3472 (XXX) B defines a Nuclear-Weapon-Free Zone as any zone recognized as such by the UNGA, which any group of States, in the free exercises of their sovereignty, has established by virtue of a treaty or convention whereby:
(a) The statute of total absence of nuclear weapons to which the zone shall be subject, including the procedure for the delimitation of the zone, is defined;

nuclear weapons within the region, have emerged within international forums since the 1990s. In particular, the adoption of a resolution calling for the establishment of a zone free of weapons of mass destruction (WMDFZ) in the Middle East during the 1995 NPT Review and Extension Conference[262] which, while not directly addressing Northeast Asia, underscored the international community's support for regional NWFZs. There exist five recognized such zones in the world, in Latin America and the Caribbean, in the South Pacific, in Southeast Asia, in Africa, and in Central Asia, and a nuclear-weapon-free-status was granted to Mongolia[263] who wished to join the international nonproliferation efforts.

Efforts to establish such a zone in Northeast Asia have faced obstacles due to the previously described regional security dynamics and the different national interests of the actors involved. During the 1990s, and prior to North Korean nuclear program, the Center for International Strategy, Technology, and Policy (CISTP) at the Georgia Institute of Technology investigated the feasibility of creating a 'limited' NWFZ-NEA encompassing Japan, North Korea, South Korea, and Mongolia[264] to prevent what were already perceived as dangerous proliferation threats in the area. By 1995, CISTP had sponsored second-track consultations on the geographical definition of the area,

(b) An international system of verification and control is established to guarantee compliance with the obligations deriving from that statute." Nuclear-Weapon-Free-Zones, in UNODA,

[262] Daryl Kimball and Shannon Bugos, "U.S.-North Korean Agreed Framework at a Glance," *Arms Control Association*, July 2023, https://www.armscontrol.org/factsheets/us-north-korean-agreed-framework-glance.

[263] United Nations, "Mongolia's Nuclear-Weapon-Free Status," accessed January 2, 2025, https://www.un.org/nwfz/content/mongolias-nuclear-weapon-free-status.

[264] Liping Xia, "Viewpoint: Nuclear-Weapon-Free Zones: Lessons For Nonproliferation In Northeast Asia," *The Nonproliferation Review* (Fall 1999): 83.

whether it should have included NWS, and which kind of weapons should not have been placed within the area, but eventually did not progress.[265]

A significant development in nuclear policy occurred with the signing of the Joint Declaration on the Denuclearization of the Korean Peninsula on January 20, 1992, between the Republic of Korea (ROK) and the Democratic People's Republic of Korea (DPRK).[266] The agreement was reached against the backdrop of the post-Cold War security realignment and growing regional concerns over nuclear proliferation, particularly following revelations about North Korea's nuclear ambitions. The withdrawal of U.S. tactical nuclear weapons from South Korea in 1991, as part of the U.S. Presidential Nuclear Initiatives (PNIs), also created an opening for diplomatic engagement on nuclear issues between the two Koreas.[267]

The Joint Declaration was intended to stabilize inter-Korean relations and reduce nuclear risks. It committed both sides to refrain from possessing, producing, or deploying nuclear weapons, and to forgo uranium enrichment and plutonium reprocessing capabilities, limiting their nuclear activities strictly to peaceful purposes. The agreement further envisioned the establishment of a South-North Joint Nuclear Control Commission (JNCC) to oversee compliance, including the implementation of

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[265] Exequiel Lacovsky, "*A Nuclear Weapon Free Zone in Northeast Asia: Prospects and Insights from Other Regions*," *Journal for Peace and Nuclear Disarmament* 6, 1 (2023): 161.

[266] ROK Minister of Foreign Affairs (MOFA), "Joint Declaration on The Denuclearization of The Korean Peninsula," accessed February 12, 2025, https://www.mofa.go.kr/eng/brd/m_5476/view.do?seq=305870&srchFr=&srchTo=&srchWord=&srchTp=&multi_itm_seq=0&itm_seq_1=0&itm_seq_2=0&company_cd=&company_nm=&page=6&titleNm=.

[267] Hans M. Kristensen and Robert S. Norris, "A history of US nuclear weapons in South Korea," *Bulletin of the Atomic Scientists* 73, no. 6 (2017): 349–357.

mutual inspections.[268] For South Korea, the agreement served as a reaffirmation of its official non-nuclear status, following its accession to the NPT in 1975, and represented an effort to address concerns arising from its covert nuclear activities in the 1970s. At the same time, it reflected Seoul's broader strategy to balance its dependence on U.S. security guarantees.

Despite the initial optimism surrounding the Joint Declaration, its implementation quickly stalled. Mutual inspections never materialized, primarily due to North Korea's resistance and growing suspicions about its nuclear program.[269] While the Joint Declaration has not been operationally effective, it remains a reference point in denuclearization discussions and a marker of South Korea's ongoing reliance on diplomatic and alliance-based approaches to manage nuclear risks—even as latent capabilities and reprocessing debates periodically surface in Seoul's strategic discourse.

Since the DPRK announced its planned withdrawal from the NPT in 1994, causing a de facto nuclear crisis on the Korean Peninsula, there have been a series of efforts to restore the status quo, and subsequently to reach complete, or at least partial, denuclearization. Most efforts, in the form of high level meetings, ad-hoc conferences, and stages of talks, were guided by the US with the desire to fully halt the North Korean nuclear program. However, other fundamental actors in the region, such as the PRC, the Russian Federation, and Japan, were later included in hopes to create a comprehensive dialogue where the interests of all the actors were represented. In June 1994, former US President Jimmy Carter visited Pyongyang and met with North Korean leader Kim Il-sung. Carter entered the intense negotiations which were already

[268] See 267.

[269] Jeffrey Lewis, "Why the 1992 Joint Declaration on Denuclearization of the Korean Peninsula Still Matters," 38 North, March 18, 2011, https://www.38north.org/2011/03/1992-joint-declaration/.

taking place between US, North Korean, and IAEA officials that were told to leave the country.[270]

Kim and Carter reached a preliminary agreement under which the US would allow the DPRK's to acquire light-water reactors to solve the country's energy demands, and both nations would resume negotiations to improve their bilateral relations. In exchange, North Korea renounced expelling IAEA inspectors at the Yongbyon nuclear facility to monitor the reprocessing of fuel rods. As much as the visit's controversial nature increased concerns within the Clinton administration and international observers, the discussions paved the way for the Agreed Framework of October 1994.[271] The Agreed Framework, which went on for the rest of Clinton's administration lifetime in 2002 has been one of the longest agreements between Washington and Pyongyang. However, the arrangement was unable to halt North Korea from developing its nuclear weapons program and was ultimately deemed to fail.

Thus, the Agreed Framework, signed in October 1994 between Washington and Pyongyang, entailed the DPRK to freeze its nuclear program and dismantle the reactors considered a threat to nonproliferation, in exchange for the construction of two civilian light water reactors (LWRs) by the US, and aimed at the overall improvement of bilateral relations between the two countries.[272] The AF managed to temporarily commit North Korea to remaining a party to the NPT and to implementing the 1992

[270] Robert R. King, "Jimmy Carter's Post-Presidency Role in U.S.-North Korea Relations," *Center for Strategic and International Studies*, last modified July 25, 2023, https://www.csis.org/analysis/jimmy-carters-post-presidency-role-us-north-korea-relations.

[271] Ibid.

[272] Kelsey Davenport, "The U.S.-North Korean Agreed Framework at a Glance" *Arms Control Association*, February 2022, https://www.armscontrol.org/factsheets/us-north-korean-agreed-framework-glance.

Joint Declaration on the Denuclearization of the Korean Peninsula, including the monitoring of its nuclear facilities by the International Atomic Energy Agency (IAEA). The AF set up an international consortium called the Korean Peninsula Energy Development Organization (KEDO) to implement the treaty obligations. While initially succeeding in freezing weapons grade plutonium production, delays in LWR construction, political shifts in the US, and allegations of North Korea pursuing a clandestine uranium enrichment program strained the agreement. By October 2002, following mutual accusations of non-compliance, the AF collapsed, leading to North Korea's eventual withdrawal from the NPT and the resumption of its nuclear activities.[273]

The second 'round' of negotiations on the denuclearization of the Korean Peninsula is known as the Six-Party Talks, a series of multilateral discussions that initiated in a moment of escalation of threat after the DPRK's withdrawal from the NPT in 2003 and ended in 2009. Aside from North Korea and the US, the Talks involved the PRC, Japan, South Korea, and the Russian Federation and took place in Beijing.[274] Amid periods of diplomatic impasse during the various rounds, when the DPRK committed to dismantle "all nuclear weapons and existing nuclear program"[275] in exchange for the recognition of the North's right to peaceful use of nuclear energy in September 2005, the Six-Party Talks reached their momentum.

After new US sanctions and several missile tests by the Kim's regime condemned by UNSC Resolution 1718, further advancements were made in February 2007 when the parties agreed on a step-by-step plan to implement the 2005 agreement, where in a time span of 60 days the parties should provide fuel oil and North Korea

[273] Ibid.

[274] Kelsey Davenport, "The Six-Party Talks at a Glance," *Arms Control Association*, February 2023, https://www.armscontrol.org/factsheets/six-party-talks-glance.

[275] Ibid.

shut down the Yongbyon nuclear plant altogether. From its side, the US demanded "that North Korea declare its willingness to the "complete, verifiable, and irreversible dismantlement" of its nuclear programs, a policy that had come to be known as CVID."[276] Despite initial progress, the talks ultimately stalled due to verification measures disagreements, highlighting the complexities of multilateral negotiations and the persistent challenges in achieving denuclearization on the Korean Peninsula. At the end, the initial threat to proliferation worsened, when in April 2009 Pyongyang test-fired a modified TaepoDong-2 rocket and withdrew from the Talks.[277]

Following this, the Obama administration adopted a policy of "strategic patience," which involved maintaining pressure through sanctions while avoiding proactive engagement with Pyongyang.[278] This approach resulted in limited diplomatic engagement with North Korea and did not yield significant progress in curbing its nuclear advancements. Throughout this period, North Korea continued to develop its nuclear and missile programs, conducting multiple tests that heightened regional tensions.[279] The Trump administration marked a significant shift in U.S. policy toward North Korea. In 2017, the relationship between the United States and North Korea deteriorated sharply, characterized by a series of hostile exchanges. President Donald Trump issued strong warnings, including a statement promising "fire and fury" in

[276] Ibid.

[277] Mark E. Manyin, Kirt Smith, and Mary Beth D. Nikitin, *North Korea: A Chronology of Events from 2016 to 2020*, Congressional Research Service Report R46349, May 5, 2020, https://www.everycrsreport.com/reports/R46349.html.

[278] Changsop Pyon, "Strategic Patience or Back to Engagement? Obama's Dilemma on North Korea," *North Korean Review* 7, no. 2 (Fall 2011): 75.

[279] At the moment of writing, North Korea has conducted six nuclear tests in October 2006, May 2009, February 2013, January and September 2016, and September 2017. For details see Nuclear Threat Initiative (NTI), "North Korea Overview," December 16, 2024, https://www.nti.org/analysis/articles/north-korea-overview/.

response to North Korean provocations.[280] Concurrently, North Korea conducted several missile tests, including intercontinental ballistic missiles (ICBMs) capable of reaching the U.S. mainland, and its sixth nuclear test in 2017.

In a surprising turn, 2018 ushered in a phase of diplomatic engagement. On June 12, 2018, President Trump and North Korean leader Kim Jong Un held a historic summit in Singapore, marking the first meeting between a sitting U.S. president and a North Korean leader. The leaders signed a joint statement in which North Korea committed to "work toward complete denuclearization of the Korean Peninsula." However, the statement lacked specific details regarding timelines, verification mechanisms, and the precise definition of denuclearization.[281] The second summit took place in Hanoi, Vietnam, in February 2019, and concluded without an agreement, primarily due to disagreements over the extent of sanctions relief and the scope of denuclearization measures.[282] Lastly, in June 2019, President Trump met with Kim Jong Un at the Korean Demilitarized Zone (DMZ) and crossed the Military Demarcation Line (MDL).[283] During this encounter, President Trump became the first sitting U.S. president to step into North Korea. While the meeting was largely symbolic

[280] BBC, "Donald Trump threatens 'fury' against N Korea," August 8, 2017, https://www.bbc.com/news/world-us-canada-40869319.

[281] Mark E. Manyin, Mary Beth D. Nikitin, Emma Chanlett-Avery, and Dianne E. Rennack, *The February 2019 Trump-Kim Hanoi Summit*, Congressional Research Service Report IN11067, March 6, 2019, https://crsreports.congress.gov/product/pdf/IN/IN11067.

[282] Matthew S. Schwartz, "Trump And Kim's Second Nuclear Summit Ends With No Deal," *NPR*, February 28, 2019, https://www.npr.org/2019/02/28/698848039/second-nuclear-summit-ends-with-no-deal.

[283] The MDL is the official border between North and South Korea running approximately 248 kilometers across the peninsula, established by the 1953 Korean Armistice Agreement. The DMZ is a buffer zone extending 2 kilometers on each side of the MDL, totaling 4 kilometers in width, created to separate military forces and reduce tensions.

and aimed at renewing dialogue, it did not result in substantive progress or the resumption of formal negotiations.[284]

At the inter-Korean level, South Korean President Moon Jae-in and North Korean leader Kim Jong Un signed the Panmunjom Declaration on April 27, 2018, an historic agreement aimed to usher in a new era of peace and prosperity on the Korean Peninsula.[285] Key commitments included the pursuit of complete denuclearization, the cessation of hostile activities, and efforts to transform the Korean Armistice Agreement into a formal peace treaty, thereby officially ending the Korean War. Additionally, the declaration emphasized enhancing inter-Korean relations through high-level talks, establishing a joint liaison office in Kaesong, and promoting various cooperative initiatives, such as the inter-Korean women hockey team at the 2018 Pyeongchang Winter Olympics. Despite the ambitious goals set forth, subsequent challenges and the change in administration have impeded the realization of the declaration's objectives.

Indeed, diplomatic efforts stalled later in 2019 due to persistent differences over denuclearization and sanctions relief. The Biden administration, which took office in January 2021, has set for a cautious approach, focusing on coordination with allies such as South Korea, which had changed to the Yoon's administration, and Japan, but without engaging directly with the DPRK. Instead, it employed a severe declaratory

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[284] James Doubek, "Trump to Meet Kim Jong Un at DMZ," *NPR*, June 30, 2019. https://www.npr.org/2019/06/30/737365074/trump-to-meet-kim-jong-un-at-dmz.

[285] Panmunjom (판문점) or Joint Security Area is the 'village' within the DMZ and situated on the MDL, where the Armistice Agreement was signed and is a symbolic place for inter-Korean negotiations. For the Panmunjom Declaration see ROK MOFA, *Panmunjom Declaration for Peace, Prosperity and Unification of the Korean Peninsula (2018.4.27)*, September 11, 2018, https://www.mofa.go.kr/eng/brd/m_5478/view.do?seq=319130&srchFr=&srchTo=&srchWord=&srchTp=&multi_itm_seq=0&itm_seq_1=0&itm_seq_2=0&company_cd=&company_nm=&page=1&titleNm=.

policy, stating that any attack by the North on the U.S. or its allies would mean the end of the regime in Pyongyang.[286] In the meantime, in 2022 North Korea has declared itself a nuclear weapons state and has said that the country will not denuclearize unless nuclear weapons are eliminated at the global level.[287] Moreover, it had revised the country's nuclear doctrine with the 2022 Nuclear Forces Policy Law, adopting a preoccupying preemptive posture in a wider range of cases.[288]

For most observers, the rounds of negotiations on the denuclearization of the Korean Peninsula followed a pattern of provocations by North Korea, consequent nuclear crisis, tension escalation, and ultimate demand for compensation as the condition to stop proliferation activities.[289] Amid the persistent failure of past attempts at the complete, verifiable, and irreversible dismantlement (CVID) of the North Korean program, scholars and policymakers have increasingly advocated for a phased approach to denuclearization on the Korean Peninsula. This approach recognizes that Pyongyang is unlikely to relinquish its nuclear arsenal under maximalist demands, but emphasizes small, verifiable steps toward arms control and risk reduction, aiming to cap, freeze, and eventually roll back North Korea's nuclear program over time.[290]

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[286] U.S. Department of Defense, *54th Security Consultative Meeting Joint Communique*, November 3, 2022, https://www.defense.gov/News/Releases/Release/Article/3209105/54th-security-consultative-meeting-joint-communique/.

[287] Yoonjung Seo, Larry Register, and Heather Chen, "North Korea Declares Itself a Nuclear Weapons State, in 'Irreversible' Move," *CNN*, September 9, 2022, https://www.cnn.com/2022/09/09/asia/north-korea-kim-nuclear-weapons-state-law-intl-hnk/index.html.

[288] Kelsey Davenport, "North Korea Passes Nuclear Law," Arms Control Association, October 2022, https://www.armscontrol.org/act/2022-10/news/north-korea-passes-nuclear-law.

[289] Lawrence, 10.

[290] Frank Aum and Moon Chung In, "Denuclearization on the Korean Peninsula. When negotiating with North Korea, absolute denuclearization should be the goal rather than a

However, critics warn that such an approach might de facto accept North Korea's nuclear status,[291] weakening the global nonproliferation regime and undermining the credibility of U.S. security guarantees to allies like South Korea. This tension reflects the broader challenge Seoul faces—balancing the risks of North Korean nuclear entrenchment against the dangers of alliance erosion and proliferation instability in the region.

Furthermore, while past diplomatic efforts—such as the Agreed Framework and the Six-Party Talks—were underpinned by a shared commitment among all participating states to the denuclearization of the Korean Peninsula, the current geopolitical landscape casts doubt on whether key actors, particularly the Russian Federation and the People's Republic of China, retain a genuine interest in pursuing this objective. Moscow's alignment with Pyongyang and growing tensions with the United States suggest that future negotiations may lack the unified purpose that characterized earlier initiatives, further complicating efforts to curb North Korea's nuclear program and exacerbating regional security uncertainties.[292] These episodes

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prerequisite.," *United States Institute of Peace*, December 6, 2022, https://www.usip.org/publications/2022/12/incremental-denuclearization-korean-peninsula and Backgrounder on Korean Peninsula-Nuclear Disarmament De-escalation of Conflict, *United States Conference of Catholic Bishops*, February 2019, https://www.usccb.org/resources/backgrounder-korean-peninsula-nuclear-disarmament-de-escalation-conflict.

[291] South Korea has been a staunch opponent of the recognition of the DPRK as a nuclear weapon state and continues to pursue the denuclearization of the Peninsula as a primary policy goal. See Lami Kim, "Nuclear Armament Under a Troubled Democracy," *United States Institute of Peace*, February 10, 2025, https://www.usip.org/publications/2025/02/risks-south-koreas-nuclear-armament-under-troubled-democracy.

[292] There is a 2019 step-by-step roadmap for the resolution of the issues on the Korean Peninsula proposed by Russia and the PRC that was never voted at the UNSC. Other ideas

reveal that despite significant diplomatic engagement, the persistent threat from North Korea and alliance uncertainties have limited the efficacy of denuclearization efforts, pushing Seoul to maintain a latent nuclear posture.

2.5 South Korea's Conventional Counterforce and Countervalue Strategy

Complementing its nuclear policy, South Korea's conventional defense strategies have evolved to address both the threat posed by North Korea and the perceived shortcomings of extended deterrence. The U.S. deployed tactical nuclear weapons (TNWs) to South Korea in 1958, five years after the end of the Korean War to offset North Korea's conventional military superiority and served as a deterrent during the Cold War.[293] Washington maintained its forward deployment in South Korea for 33 years until 1991. At its peak in 1967, the nuclear arsenal reached an estimated total of around 950 warheads.[294] In 1991, under President George H.W. Bush's Presidential Nuclear Initiatives, the U.S. announced the withdrawal of all tactical nuclear weapons deployed overseas-except the TNWs deployed under NATO's arrangements in Europe-, including those in South Korea. This decision was influenced by the end of the Cold War and a desire to encourage North Korea to abandon its nuclear ambitions[295] in the process of negotiating the above-mentioned Agreed

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from the countries include the creation of a new neutral forum on the example of the Ulaanbaatar Dialogue (UBD).

[293] Ankit Panda, "South Korea Doesn't Want North Korea Labeled as a Nuclear Power. It's Causing Friction With the United States," *Carnegie Endowment for International Peace*, January 23, 2025, https://carnegieendowment.org/emissary/2025/01/north-korea-nuclear-weapons-npt-us-denuclearization-policy?lang=en.

[294] Kristensen and Norris, "A history of US nuclear weapons in South Korea."

[295] Daryl Kimball and Kingston Reif, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," *Arms Control Association*, July 2017,

Framework. The withdrawal was completed by December 1991, resulting in the removal of approximately 100 nuclear weapons from South Korea.

Since the hidden attempt to develop an indigenous nuclear program during the 1970s, and the removal of U.S. tactical weapons, South Korea has drafted and revised several defense strategies, ultimately employing a structured conventional strategy decided to counter the double threat of potential US abandonment and rising nuclear provocations by North Korea.

Bowers and Hiim have provided a detailed explanation of the security strategy employed by South Korea to face this unsurmountable dilemma, and the risks it poses, both for Seoul and for the overall stability in the Korean Peninsula. The two scholars affirm that "to deter North Korea [...] South Korea is operationalizing an independent conventional counterforce strategy, or offensive and defensive measures designed to destroy or deplete the nuclear forces of the adversary."[296] This strategy is reinforced by threats of countervalue strikes aimed at the Kim's family and the North Korea governing elites. Thus, for them South Korea is using a strategy of both short- and long-term *hedge* to face US disengagement that will, at the same time, act as a deterrent for North Korea and bolster the country's nuclear latency.

In practice, the strategy adopted by South Korea at the moment is composed of a 'triad of military concepts': the Korean Air and Missile Defense (KAMD) system, and the Kill Chain adopted in 2012, and the Korean Massive Punishment and

https://www.armscontrol.org/factsheets/presidential-nuclear-initiatives-pnis-tactical-nuclear-weapons-glance.

[296] Ian Bowers and Henrik Stålhane Hiim, "Conventional Counterforce Dilemmas: South Korea's Deterrence Strategy and Stability on the Korean Peninsula," *International Security* 45, no. 3 (Winter 2020/21): 8.

Retaliation (KMPR) strategy released in 2016.[297] The KAMD is a sophisticated, multi-layered defense system designed to detect and intercept a wide range of missiles targeting South Korea at an early stage: at the beginning it constituted of an indigenous land-based BMD capability, and in 2016, it was integrated with the deployment of the first THAAD missile defense system, but it remained out of the U.S.-led BMD partnership.[298] Together with the Kill Chain system, the KAMD embodies the principle of deterrence by denial.[299] The Kill Chain is instead designed to execute *preemptive* strikes on Pyongyang's nuclear and missile sites in the event that Seoul faces an immediate threat.[300] Lastly, the KMPR has been added to punish and retaliate against North Korea's sensitive targets, both leaders and military facilities, providing the countervalue part of the strategy. Bowers and Hiim believe that the conventional counterforce and countervalue strategy fundamentally improves Seoul's security, and particularly it would provide a 'stopgap deterrent' in the case of alliance collapse.

An opinion piece by the CSIS' Korea Chair asserts that South Korea has changed its historically defensive military stance to a more offensive one in response to North Korea's advancing nuclear and missile capabilities. This is showcased by two of the concepts of the South Korean military triad: first, the development of the Kill

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[297] Ibid, 11.

[298] Sukjoon Yoon, "Stopping North Korean Missiles: An Alternative to THAAD," *The Diplomat*, July 18, 2016, https://thediplomat.com/2016/07/stopping-north-korean-missiles-an-alternative-to-thaad/.

[299] ROK Ministry of National Defense (MND), *2022 Defense White Paper*, accessed January 7, 2025, 57, https://www.mnd.go.kr/cop/pblictn/selectPublicationUser.do?siteId=mndEN&componentId=51&categoryId=0&publicationSeq=1057&pageIndex=1&id=mndEN_031300000000.

[300] Jun Ji-hye, "3 Military Systems to Counter N. Korea: Kill Chain, KAMD, KMPR," *The Korea Times*, October 19, 2016, https://www.koreatimes.co.kr/www/nation/2025/01/113_217259.html.

Chain preemptive strike capabilities to detect and target North Korea missile launch preparations before their actualization.[301] Second, the retaliatory nature of the KMPR formulation follows a strategy of deterrence by threat of punishment. Moreover, the experts argue that South Korea has invested heavily in precision-guided munitions and extended-range ballistic missiles,[302] such has the Hyunmoo-5 class ballistic missile.

This was possible thanks to continuous negotiations on lifting the U.S.-imposed missile range on South Korea's, which was established in 1979 and terminated after more than four decades in 2021.[303] The Missile Guidelines were periodically revised: in 1997, the range was increased to 300 kilometers with a 500-kilogram warhead limit; in 2012, the range was extended to 800 kilometers; and in 2017, the payload limit was removed entirely. With the total removal in 2021, South Korea can now develop intermediate-range ballistic missiles (IRBMs) capable of reaching thousands of kilometers.[304] In fact, Hyunmoo-5 is a product of this development, with an estimated payload of 8,000 to 9,000 kilograms.[305] Recently, the ROK's National Security Council

[301] Sungmin Cho, "South Korea's Offensive Military Strategy and Its Dilemma," *CSIS*, February 29, 2024, https://www.csis.org/analysis/south-koreas-offensive-military-strategy-and-its-dilemma.

[302] Ibid.

[303] Brian Kim, "US lifts missile restrictions on South Korea, ending range and warhead limits," *DefenseNews*, May 25, 2021, https://www.defensenews.com/global/asia-pacific/2021/05/25/us-lifts-missile-restrictions-on-south-korea-ending-range-and-warhead-limits/.

[304] Ibid.

[305] Joseph Dempsey, "South Korea's *Hyunmoo-5* breaks cover," *IISS*, October 22, 2024, https://www.iiss.org/online-analysis/missile-dialogue-initiative/2024/10/south-koreas-hyunmoo-5-breaks-cover/.

(NSC) has further extended the range of missiles for export purposes from 300 to 500 kilometers, following requests from its Middle Eastern partners.[306]

These assets enhance its ability to conduct targeted strikes against North Korea's critical military infrastructure and has also bolstered its Intelligence Surveillance and Reconnaissance (ISR) capabilities, ensuring timely and accurate information to execute both the preemptive and retaliatory strikes. Professor Cho Sung-min arrives at almost the same conclusions identified by Bowers and Hiim, namely, that this kind of posture, in particular its countervalue section, is a costly investment and carries inherent risks of escalation on the Peninsula, triggering a North Korean response. The solution for him lies in keeping the offensive strategy as simple as possible, refrain from escalating rhetoric at the level of the Ministry of Defense, and engage the PRC in diplomatic efforts with the Northern counterpart.[307] However, this conventional force build-up might create friction within the alliance with the US, its other allies in the region, and it could contribute to the intensification of the arms race, eroding already challenging nonproliferation efforts.

Bowers and Hiim in one sentence give voice to a clear but rather overlooked argument, i.e. that "few, if any, nonnuclear states have sought to rely on advanced conventional capabilities to deter a nuclear-armed state,"[308] maybe because deterrence, as it has been theorized in the past century, only works if both parties are equal in that they are nuclear armed states. Indeed, as it might be assumed, countering a nuclear armed state with conventional forces, as much as these are cutting edge technology, is a rather difficult task. The challenges that emerge are that of credibility, adapting to

[306] Dong-Hyun Kim, "South Korea to extend export missile range from 300 km to 500 km," *KEDGlobal*, August 20, 2024, https://www.kedglobal.com/aerospace-defense/newsView/ked202408200007.

[307] Ibid.

[308] Bowers and Hiim, "Conventional Counterforce Dilemmas," 8.

North Korea's ongoing adjustments to strategic designs aimed at countering the same South Korean conventional counterforce, and the potential to exacerbate tensions and undermine crisis stability leading North Korea to exaggerated response.[309]

2.6 Mechanisms of Combined Defense and Deterrence in the ROK-US alliance

The defense alliance between the Republic of Korea (ROK) and the United States has undergone continuous transformation since its formalization with the 1953 Mutual Defense Treaty. This evolution reflects shifts in the geopolitical landscape and the need to adapt to the persistent and growing threats posed by the Democratic People's Republic of Korea (DPRK), particularly its nuclear weapons, both strategic and tactical, and missile capabilities. Central to the alliance are several key institutional mechanisms that structure defense cooperation and extended deterrence: the Extended Deterrence Strategy Consultation Group (EDSCG), the Security Consultative Meeting (SCM), the Korea-U.S. Integrated Defense Dialogue (KIDD), the Deterrence Strategy Committee (DSC) and its Table-top Exercises (DSC TTX), the Tailored Deterrence Strategy (TDS), and the recently established Nuclear Consultative Group (NCG). Joint Military Exercises (JMEs) further underpin these mechanisms, ensuring operational preparedness and signaling alliance resolve. These institutional arrangements collectively form the backbone of the ROK-U.S. security partnership and have been expanded over the decades following South Korea's demands for alliance reassurance.

From a military point of view, the Combined Forces Command (CFC), established in 1978, stands as the principal warfighting command overseeing the joint deterrence and defense of the two countries, and has been considered as the primary symbolic element in the U.S.-ROK alliance.[310] The CFC is led by a U.S. four-star

[309] Ibid, 9.

[310] United States Forces Korea (USFK), *Combined Forces Command*, accessed January 29, 2025, https://www.usfk.mil/About/CFC/.

general, who concurrently serves as the Commander of the United States Forces Korea (USFK) and the United Nations Command (UNC). The CFC was created as a more cooperative decision-making body between the allies, where operational control (OPCON) was jointly administered, and in 1994 peacetime OPCON was transferred from the CFC to the Forces of the Republic of Korea (ROKA).[311] USFK, the American military component stationed in South Korea, operates as the primary entity managing U.S. military presence and capabilities, including approximately 28,500 troops across various bases and is regulated by the Status of Forces Agreement (SOFA).[312]

However, in the early 2000s, discussions emerged regarding the future structure of the alliance and the division of operational control between the two partners. The Talks on the Future of the Alliance (FOTA) (2002–2004) and the Security Policy Initiative (SPI) (2004–2008) served as key platforms for addressing these issues, focusing on the reconfiguration of the U.S. military presence and adjustments to the alliance's command structure. One of the most significant outcomes was a plan for the future transition of wartime operational control (OPCON) from the U.S.-led CFC to South Korean leadership,[313] with the United States shifting to a supporting role. This

[311] Clint Work, "The Long History of South Korea's OPCON Debate," *The Diplomat*, November 1, 2017, https://thediplomat.com/2017/11/the-long-history-of-south-koreas-opcon-debate/.

[312] Republic of Korea and United States, *Agreement Under Article IV of the Mutual Defense Treaty Between the Republic of Korea and the United States of America, Regarding Facilities and Areas and the Status of United States Armed Forces in the Republic of Korea (U.S.-ROK SOFA)*, July 9, 1966, https://www.usfk.mil/Portals/105/Documents/Contracting/Contractor%20Links%20Sept%2015/US-ROK%20SOFA_1966-67.pdf.

[313] ISDP, "Not a Sovereignty Issue: Understanding the Transition of Military Operational Control between the United States and South Korea," April 2021,

transition has been a sensitive and complex process, as the OPCON transfer, which is still in plan and discussed at the SCMs, has been repeatedly delayed due to security concerns and changes in regional dynamics.[314] Since the first instances under the presidency of Roh Moo-hyun, the debate on the OPCON transition has resurfaced periodically in South Korea, particularly under the Moon's administration (2017-2022), who viewed the transition as a symbol of Seoul's growing independence and national autonomy within the alliance, and providing a stronger stance for negotiations with the DPRK.[315]

Complementing the structure of CFC and USFK, the United Nations Command (UNC)—established in 1950 during the Korean War—oversees the enforcement of the 1953 Armistice Agreement and facilitates multinational military contributions to security on the Peninsula. Additionally, the ROK Joint Chiefs of Staff (JCS) and the Ministry of National Defense (MND) are critical South Korean institutions coordinating national defense policies and ensuring interoperability with U.S. forces. These military bodies collectively form a complex and robust command network designed to uphold the stability and security of the Korean Peninsula, reflecting the

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https://www.isdp.eu/publication/not-a-sovereignty-issue-understanding-the-transition-of-military-operational-control-between-the-united-states-and-south-korea/.

[314] Both the 55th (2023) and 56th (2024) SCM Joint Communiques referred to the "continued evaluation and progress" of the Conditions-based Wartime Operational Control (OPCON) Transition Plan (COTP). See U.S. Department of Defense, *55th Security Consultative Meeting Joint Communique*, November 13, 2023, https://www.defense.gov/News/Releases/Release/Article/3586522/55th-security-consultative-meeting-joint-communique/ and *56th Security Consultative Meeting Joint Communique*, October 30, 2024, https://www.defense.gov/News/Releases/Release/Article/3951794/56th-security-consultative-meeting-joint-communique/.

[315] Clint Work, "The Long History of South Korea's OPCON Debate."

depth and institutionalization of the ROK-U.S. alliance. Together, they carry out joint military exercises (JMEs) such as Ulchi Freedom Shield and Foal Eagle. The resumption and expansion of large-scale JMEs under the Yoon administration signaled a return to robust deterrence practices following a period of scaled-back drills under the Moon administration.[316]

The Security Consultative Meeting (SCM), first held in 1968, is the principal forum for high-level defense discussions between the ROK Minister of National Defense and the U.S. Secretary of Defense. It provides strategic direction for the alliance and serves as a platform to review security conditions, defense policies, and military cooperation. Key developments include the 45th SCM in 2013, which introduced the Tailored Deterrence Strategy, the U.S.-ROK Foreign and Defense Ministers' (2+2) Meeting in 2016, which established the EDSCG, and the 54th SCM in 2022, which issued a joint warning that any North Korean nuclear attack would result in the end of the Kim regime. This statement marked the alliance's most explicit deterrence posture to date.

The Korea-U.S. Integrated Defense Dialogue (KIDD) was created in 2011 as a working-level consultative mechanism that integrated various defense dialogues under a single framework.[317] Its function is to support the SCM by facilitating continuous discussions on alliance management, operational planning, and policy coordination. Key issues addressed within KIDD include the above-mentioned transition of wartime

[316] Bruce Klingner, "U.S., South Korea to Resume Military Exercises," The Heritage Foundation, August 2, 2022, https://www.heritage.org/china/commentary/us-south-korea-resume-military-exercises.

[317] Scott S. Snyder, "U.S.-ROK Security Consultative Meetings: A Review of Progress Under the Obama and Lee Administrations," *Council on Foreign Relations*, October 26, 2012, https://www.cfr.org/blog/us-rok-security-consultative-meetings-review-progress-under-obama-and-lee-administrations.

operational control (OPCON) and the enhancement of missile defense capabilities. The Deterrence Strategy Committee (DSC) also convenes alongside KIDD, ensuring integration between strategic planning and operational readiness.

The Tailored Deterrence Strategy (TDS) established in 2013 was designed to address the specific and evolving threats posed by North Korea's advances in its nuclear weapons and weapons of mass destruction (WMD) programs.[318] Prior to the TDS, the deterrence posture was largely generalized, relying on the broader U.S. nuclear umbrella. However, North Korea's development of nuclear and missile capabilities necessitated a more nuanced and flexible approach. The 2013 TDS aimed to deter North Korea across the entire spectrum of conflict by integrating conventional, missile defense, and nuclear capabilities.[319]

Established in 2013 alongside the TDS, the Deterrence Strategy Committee (DSC) serves as a key deputy-minister-level consultative body focused on refining the alliance's deterrence posture. The DSC meets twice annually in conjunction with the Korea-U.S. KIDD. Its primary task is to develop and adjust deterrence measures in response to North Korea's evolving capabilities. A critical component of the DSC's work is the Table-top Exercise (DSC TTX), an annual simulation designed to test the alliance's ability to respond to nuclear contingencies on the Korean Peninsula. These exercises involve joint scenario-based planning sessions, enabling ROK and U.S. officials to evaluate decision-making processes and coordination during nuclear crises. The TTX exercises were institutionalized as an annual event following the 54th SCM

[318] U.S. Forces Korea, "U.S., South Korea Announce Tailored Deterrence Strategy," October 2, 2013, https://www.usfk.mil/Media/Newsroom/News/Article/600966/us-south-korea-announce-tailored-deterrence-strategy/.

[319] Ibid.

in 2022,[320] highlighting their importance in enhancing the credibility and operational readiness of the extended deterrence framework.

To further deepen deterrence discussions beyond the military sphere and include diplomatic, informational, and economic dimensions, the above-mentioned Extended Deterrence Strategy Consultation Group (EDSCG) was inaugurated during the annual U.S.-ROK Foreign and Defense Ministers' (2+2) Meeting on October 19, 2016, that followed alongside the 48th SCM.[321] The vice-minister-level body facilitates high-level policy coordination and strategic dialogue on deterrence posture, with a particular focus on enhancing the visibility and credibility of U.S. strategic assets in the region, representing a significant development in the alliance's deterrence architecture.[322]

As the security environment deteriorated in the years following its adoption, the TDS underwent several revisions, most notably in 2022, when the alliance sought to reinforce its deterrence posture in light of North Korea's missile tests and legislative endorsement of preemptive nuclear strikes. The 13th Deterrence Strategy Committee (DSC) in August 2022 confirmed that the TDS was being updated to ensure its

[320] For 54th SCM see 287.

[321] USFK, *Joint Communiqué of the 48th U.S.-ROK Security Consultative Meeting*, October 21, 2016, https://www.usfk.mil/Media/Newsroom/News/Article/981396/joint-communiqu-of-the-48th-us-rok-security-consultative-meeting/, and ROK Ministry of National Defense, *2016 Defense White Paper* (Seoul: Ministry of National Defense, 2017), https://www.mnd.go.kr/user/mndEN/upload/pblictn/PBLICTNEBOOK_201705180357180050.pdf.

[322] ROK Ministry of National Defense, *2022 Defense White Paper* (Seoul: Ministry of National Defense, 2023), https://www.mnd.go.kr/user/mndEN/upload/pblictn/PBLICTNEBOOK_202307280406019810.pdf.

continued effectiveness. The TDS revision was finalized in 2023, for the first time in a decade, and included a list of military and non-military responses to be implemented according to each crisis scenario. However, it did not entail nuclear sharing.[323]

During 2023, marking the seventieth anniversary of the U.S.-ROK alliance, a series of high-level reassurance measures were introduced alongside the revision of the Tailored Deterrence Strategy (TDS). The most prominent among these was the Washington Declaration in April 2023, which established the Nuclear Consultative Group (NCG), aiming to bolster nuclear deterrence coordination between the allies. The NCG created a formal mechanism for combined extended deterrence planning and joint execution, integrating South Korea's conventional support into U.S. nuclear operations during crises or wartime contingencies.[324]

The Joint Statement in Commemoration of the 70th Anniversary of the Alliance, adopted by the leaders of both nations, set the goal of developing the U.S.-ROK alliance into a "global comprehensive strategic alliance"[325] and laid out a Defense Vision for the alliance's future, focusing on three key pillars: strengthening extended deterrence against North Korea, modernizing alliance capabilities through science and technology cooperation, and deepening regional security partnerships with like-minded

[323] Hyuk-chul Kwon, "Newly revised S. Korea-US deterrence strategy does not mean nuclear sharing," *Hankyoreh*, November 14, 2023, https://english.hani.co.kr/arti/english_edition/e_international/1116256.html.

[324] U.S. Department of Defense, *55th Security Consultative Meeting Joint Communique*, November 13, 2023, https://www.defense.gov/News/Releases/Release/Article/3586522/55th-security-consultative-meeting-joint-communique/.

[325] U.S. Mission Korea, *Leaders' Joint Statement in Commemoration of the 70th Anniversary of the Alliance between the U.S. and the ROK*, Embassy & Consulate in the Republic of Korea, April 27, 2023, https://kr.usembassy.gov/042723-joint-statement-in-commemoration-of-the-u-s-rok-70th-anniversary/.

states military exercises also expanded in scope and complexity.[326] Reinforcing these efforts, the U.S. also increased the frequency and routinization of strategic asset deployments to the Korean Peninsula, including the visit of a U.S. nuclear ballistic missile submarine (SSBN) in July 2023, and delivering periodic exercises with strategic bombers. Furthermore, in 2023 the trilateral security cooperation between the U.S., South Korea, and Japan was institutionalized for the first time in the Camp David accords,[327] committing the three countries to annual trilateral military exercises. The alliance executed its first multi-domain trilateral exercise, Freedom Edge, in cooperation with Japan in 2024.[328]

By July 2024, the U.S. and South Korea issued the "Guidelines for Nuclear Deterrence and Nuclear Operations on the Korean Peninsula," formalizing nuclear coordination and planning procedures.[329] The NCG's inaugural table-top exercises and simulations were conducted to strengthen nuclear deterrence decision-making and contingency planning. Reflecting on these developments, South Korean Defense Minister Kim characterized the elevation of the alliance to a "nuclear-based

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[326] Ibid.

[327] Victor Cha, Christopher B. Johnstone, Ellen Kim, and Nicholas Szechenyi, "The Camp David U.S.-Japan-Korea Trilateral Summit: An Exchange among CSIS Japan and Korea Chairs," *CSIS*, August 23, 2023, https://www.csis.org/analysis/camp-david-us-japan-korea-trilateral-summit-exchange-among-csis-japan-and-korea-chairs.

[328] Indo-Pacific Command Public Affairs, "Trilateral Statement: First Execution of Multi-Domain Japan-ROK-US Exercise Freedom Edge," *America's Navy*, June 27, 2024, https://www.navy.mil/Press-Office/News-Stories/Article/3819224/trilateral-statement-first-execution-of-multi-domain-japan-rok-us-exercise-free/.

[329] U.S. Department of Defense, *Joint Press Release for the ROK-U.S. Defense Ministerial Meeting*, February 23, 2024, https://www.defense.gov/News/Releases/Release/Article/3852153/joint-press-release-for-the-rok-us-defense-ministerial-meeting/.

alliance."[330] The two countries' joint military exercises Freedom Shield (FS) Ulchi Freedom Shield (UFS) 23 and 24 were further conducted under an enhanced operational environment simulating realistic scenarios involving nuclear, missile, space, and cyber threats. Moreover, Field Training Exercises (FTX) across land, maritime, and air domains were more extensive than the previous year.[331]

Despite the extensive evolution and deep institutionalization of the ROK-U.S. alliance—through ever-expanding mechanisms, updated deterrence frameworks, high-level consultative bodies, and increasingly sophisticated joint exercises—these efforts have ultimately not been sufficient to eliminate South Korea's security anxieties. On the contrary, the continuous expansion and multiplication of these initiatives reflect a fundamental uncertainty within the alliance itself. The persistent need for reassurance and the recurring adjustments to deterrence structures suggest that the core issue—South Korea's underlying doubts about the credibility and durability of U.S. extended deterrence—remains unresolved. This raises the question of whether the problem lies not in the quantity or sophistication of these measures, but in a structural flaw embedded in the very nature of asymmetric alliances.

2.6 The Role and Limitations of U.S. Declaratory Policy

While South Korea's nuclear ambitions in the 1970s were ultimately curtailed by U.S. pressure and its formal integration into the nonproliferation regime, this episode reveals a deeper strategic dilemma that endures to this day. Park Chung-hee's covert nuclear program was not merely a deviation from alliance norms; it was a symptom of Seoul's underlying anxiety about the credibility and durability of U.S.

[330] U.S. Department of Defense, *56th Security Consultative Meeting Joint Communique*, October 30, 2024, https://www.defense.gov/News/Releases/Release/Article/3951794/56th-security-consultative-meeting-joint-communique/.

[331] Ibid.

security guarantees. This persistent fear of abandonment—exacerbated by shifting U.S. strategic priorities and North Korea's growing military capabilities—demonstrates that the alliance alone has not always been sufficient to fully reassure South Korea. Instead, it has compelled Seoul to explore alternative means of safeguarding its security, from nuclear hedging to conventional force buildups. This enduring tension between alliance dependence and autonomy will remain central to understanding South Korea's evolving strategic posture in the face of continued regional uncertainty and lies beneath the eventual choice of going nuclear.

The United States' declaratory deterrence policy—that is, the public statements outlining the conditions under which nuclear weapons might be used—has long been a critical component of its broader extended deterrence strategy, particularly in the context of the Korean Peninsula. However, this policy has increasingly been perceived as inadequate, ambiguous, or misaligned with the realities of the evolving security environment in Northeast Asia. Both within South Korean and U.S. strategic thinkers, skepticism has grown regarding the credibility and effectiveness of U.S. declaratory policy in deterring North Korea and reassuring its allies, particularly with the rising threat posed by North Korea's nuclear development. This section examines the central issues associated with the U.S. declaratory nuclear posture, focusing on the key policy shifts in the two countries after 2010s, and which issues contribute the most to the perception of abandonment in South Korea.

Under the Obama administration, the 2010 U.S. Nuclear Posture Review (NPR) emphasized reducing the role of nuclear weapons in U.S. national security strategy while strengthening regional deterrence.[332] The NPR introduced the notion that the

[332] U.S. Department of Defense, *Nuclear Posture Review Report*, (Washington, D.C.: U.S. Department of Defense, April 2010), viii, https://dod.defense.gov/portals/1/features/defensereviews/npr/2010_nuclear_posture_review_report.pdf.

U.S. would not use or threaten to use nuclear weapons against non-nuclear weapon states that were compliant with the Nuclear Non-Proliferation Treaty (NPT). Despite some scholars indicating that the South Korean reaction to the NPR was overall commendatory, a report from the U.S. Department of Defense highlights much more nuanced opinions.[333] Arguably, South Korean officials worried that the reduction of nuclear response by the U.S. could be perceived as a lack of resolve towards the DPRK advancements in nuclear weapons development.

While this might have seemed like a clear stance, South Korean policymakers and the public were left questioning the specific circumstances under which the U.S. would resort to nuclear use in defense of Seoul, and whether it would actually do so.[334] Particularly worrying was President Obama's commitment "to seek the peace and security of a world without nuclear weapons."[335] Experts in 2013 already analyzed ways to make the extended deterrence commitments more credible, citing forward-deployment of U.S. nuclear weapons in or close to South Korea, and sharing nuclear use responsibilities equally.[336]

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[333] Kurt Guthe and Thomas Scheber, *Assuring South Korea and Japan as the Role and Number of U.S. Nuclear Weapons are Reduced*, Defense Threat Reduction Agency, Advanced Systems and Concepts Office ASCO 2011 003, January 2011, https://nipp.org/wp-content/uploads/2021/03/Assuring-ROK-and-Japan.pdf.

[334] Young Ho Kim, "A World without Nuclear Weapons: A South Korean View," *Security Challenges* 6, no. 4 (2010): 56–58.

[335] The White House, "Remarks By President Barack Obama In Prague As Delivered," April 5, 2009, https://obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-prague-delivered.

[336] Chang Kwoun Park and Victor A. Utgoff, "On Strengthening Extended Deterrence for the ROK-U.S. Alliance," *Joint Force Quarterly* 68 (January 2013): 87-89.

South Korean concerns reached a peak under the first Trump administration (2016-2020), particularly during the 2017 nuclear crisis when President Trump employed unprecedentedly bellicose rhetoric, threatening North Korea with "fire and fury."[337] While intended to project U.S. resolve, these statements created a perception of volatility and inconsistency in U.S. policy.[338] Some South Korean observers feared that such erratic declarations undermined the predictability and reliability of the U.S. commitment to their defense, raising questions about whether the U.S. might escalate to nuclear use precipitously or, conversely, hesitate when deterrence was genuinely tested.

Moreover, key disagreements and misalignments in interests further strained the alliance during this period. Notably, President Trump repeatedly threatened to withdraw U.S. forces from South Korea, framing the military presence as a financial burden[339] and at times using dismissive language to describe the alliance. Trump demanded a substantial increase in Seoul's financial contribution toward stationing U.S. troops, leading to protracted and contentious negotiations over the Status of Forces Agreement (SOFA). This and the President's declaration on the need for Seoul and Tokyo to become more independent in their defense and deterrence capabilities,

[337] Peter Baker and Choe Sang-Hun, "Trump Threatens 'Fire and Fury' Against North Korea if It Endangers U.S.," *The New York Times*, August 8, 2017, https://www.nytimes.com/2017/08/08/world/asia/north-korea-un-sanctions-nuclear-missile-united-nations.html.

[338] Matteo Dian, "Trump's Mixed Signals toward North Korea and US-led Alliances in East Asia," *The International Spectator* 53, no. 4 (2018): 1–17.

[339] "Trump considering withdrawing up to 4,000 U.S. troops from South Korea -report," *Reuters*, November 21, 2019, https://www.reuters.com/article/markets/trump-considering-withdrawing-up-to-4000-us-troops-from-south-korea-report-idUSL3N2804OK/.

including the possibility of developing nuclear weapons, has increased the fear of a renewed arms race in Northeast Asia.[340]

While this specific standoff eased somewhat under the Biden administration, cost-sharing tensions persisted as part of broader alliance management concerns.[341] These disputes deepened South Korean anxieties about potential abandonment, reinforcing perceptions that U.S. commitments were transactional and conditional upon financial contributions. Additionally, Trump's unorthodox and highly personal diplomacy with North Korea was mostly unilateral, leaving South Korea sidelined despite President Moon Jae-in's proactive efforts to mediate inter-Korean dialogue at initial stages. Thus, the perception endured that the U.S. could bypass South Korea when deemed necessary, especially with the unexpected declaration of the suspension of military exercises.[342] This revived a lingering fear in Seoul that its security interests could be marginalized in high-stakes negotiations with the North.[343]

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[340] Austin Ramzy, "Comments by Donald Trump Draw Fears of an Arms Race in Asia," *The New York Times*, March 28, 2016, https://www.nytimes.com/2016/03/29/world/asia/donald-trump-arms-race.html?_r=1.

[341] The deal on the SOFA, called Special Measures Agreement (SMA), was reached under the Biden administration in the beginning of October 2024, in order to give stability to the alliance prior to the second term of President Trump, planned to take office in January 2025, in Sang-ho Song, "(LEAD) (News Focus) New S. Korea-U.S. defense cost deal adds stability to alliance, but Trump question lingers: experts," *Yonhap News*, October 5, 2024.

[342] Julian Borger, "US to suspend military exercises with South Korea, Trump says," *The Guardian*, June 12, 2018, https://www.theguardian.com/us-news/2018/jun/12/us-to-suspend-war-games-with-south-korea-donald-trump-kim-jong-un-north-summit.

[343] "The expression "Korea Passing" is being used more frequently these days by politicians and scholars in South Korea because they feel insecure while North Korea and the U.S. are talking mostly to each other" in Hwan Kang, "Korea Passing: Seoul's New Foreign Policy Concern," *KEI*, September 26, 2017. In South Korea there is also a way of referring to North

The Biden administration attempted to recalibrate U.S. declaratory policy with its 2022 NPR, setting "sole purpose" aside for the moment but emphasizing that nuclear weapons would be considered only in "extraordinary circumstances" to defend the vital interests of the U.S. and its allies.[344] However, the 2022 NPR presented the term "deterrence dilemma" that alarmed scholars, as it had never been used before, diminishing credibility.[345] During the 2023 SCM, the two countries reiterated that any result would result in the end of the Kim regime. However, this formulation, while an improvement in tone, remained vague. South Korean policymakers continued to demand more explicit assurances, particularly in light of North Korea's advancements in tactical nuclear weapons[346] and missile delivery systems capable of reaching South Korea with little warning. Indeed, it is not clear if the U.S. will retaliate with a nuclear response in the case that North Korea strikes the South with TNWs, a scenario that is known as limited nuclear use. This challenges the deterrence equation and showcases the failure to address the evolving nuclear balance on the Korean Peninsula.[347] To put

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Korea's diplomacy strategy of engaging directly with the U.S., leaving South Korea behind, which is the term 'tong-mi-bong-nam' (통미봉남) literally 'engage the United States, block South Korea.'

[344] Center for Arms Control and Non-Proliferation, "2022 Nuclear Posture Review," November 8, 2022, https://armscontrolcenter.org/2022-nuclear-posture-review/.

[345] U.S. Department of Defense, *2022 National Defense Strategy, including the Nuclear Posture Review and the Missile Defense Review* (Washington, D.C.: U.S. Department of Defense, October 27, 2022), 5, https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.pdf.

[346] Ankit Panda, "A Call To Arms: Kim Jong Un and the Tactical Bomb," *The Washington Quarterly* 44, no. 3 (2021): 7-24.

[347] Robert E. Kelly, "Why North Korea may use nuclear weapons first, and why current US policy toward Pyongyang is unsustainable," *The Bulletin of the Atomic Scientists*, November 21, 2023, https://thebulletin.org/2023/11/why-north-korea-may-use-nuclear-weapons-first-and-why-current-us-policy-toward-pyongyang-is-unsustainable/.

it simply, U.S. declaratory deterrence alone is insufficient in the face of North Korea's growing confidence in striking the U.S. homeland and diversifying its nuclear program.[348]

Despite the 2023 SCM's strong rhetoric, doubts about U.S. reliability persisted in Seoul. Yeo admits in 2023 that "doubts have surfaced over the past years on the Korean side regarding US commitments to the US-ROK alliance."[349] He highlighted that Seoul's frustrations surfaced over two main issues in 2023: first, the U.S. Inflation Reduction Act (IRA), seen as a protectionist move harming South Korean electric vehicle manufacturers, and second, lingering unease about U.S. extended deterrence guarantees, even after the Washington Declaration.[350] Indeed, South Korean officials wished for the U.S. to ease the ambiguity and "state clearly that North Korean nuclear first use would be met with a nuclear response," an approach that is referred to as "nuclear for nuclear."[351] Yeo argues that giving South Korea more agency—such as deeper involvement in nuclear decision-making and possibly deploying nuclear-powered submarines—could ease these anxieties.[352]

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[348] Hwee-Rhak Park, "The Necessity to Discuss 'Deterrence Failure' Regarding North Korea's Nuclear Threat," *International Studies* 60, no. 1 (January 2023): 67-90.

[349] Andrew Yeo, "Can South Korea Trust the United States?" *The Washington Quarterly* 46, no. 2 (2023): 109.

[350] Ibid, 110.

[351] Sangkyu Lee, Suon Choi, Adam Mount, and Toby Dalton, "Nuclear for Nuclear? Understanding Divergent South Korean and American Perceptions on Deterring North Korea," *Carnegie Endowment for International Peace*, June 27, 2024, https://carnegieendowment.org/research/2024/06/nuclear-for-nuclear-understanding-divergent-south-korean-and-american-perceptions-on-deterring-north-korea?lang=en.

[352] Yeo, "Can South Korea," 121.

Even as the Biden administration restored greater procedural consistency and alliance consultations at various levels, the underlying divergence in strategic objectives remained. Both allies officially support North Korea's denuclearization, yet their fundamental interests differ. For the United States, North Korea represents a nuclear proliferation challenge, and a broader regional security concern tied to its competition with China. For South Korea, however, North Korea is an existential threat, a source of potential war on the Peninsula, and a counterpart with which some form of coexistence and long-term reconciliation must ultimately be achieved.[353]

Moreover, South Korean officials often compare the U.S.-ROK alliance to NATO's nuclear-sharing framework, where European allies have a greater role in nuclear planning. In contrast, South Korea remains excluded from key decision-making, with the 2023 Nuclear Consultative Group (NCG) seen as largely symbolic. This asymmetry reflects a deeper structural inequality—while the U.S. dictates extended deterrence terms, Seoul has little agency in shaping nuclear strategy and de facto no control on the response in the case of a nuclear war scenario. This imbalance is further evident in comparisons with Japan, which enjoys stronger, less complicated strategic integration with the U.S. and condonement on ENR capabilities development.

Ultimately, the issues underlying U.S. declaratory policy stem from the tension between its global nonproliferation commitments and the specific deterrence requirements of regional allies like South Korea. The strategic ambiguity intended to maintain flexibility is increasingly perceived as a credibility gap.[354] Efforts to clarify or recalibrate declaratory policy often produce unintended anxieties, while the absence of forward-deployed nuclear capabilities and shared responsibilities mechanisms leaves South Korea feeling abandoned. As North Korea's nuclear arsenal becomes

[353] Scott S. Snyder, "Excerpt: The US-South Korea Alliance," *Council on Foreign Relations*, 2012, https://www.cfr.org/excerpt-us-south-korea-alliance#chapter-title-0-2.

[354] Bruce Klingner, "U.S., South Korea to Resume Military Exercises."

more sophisticated, the inadequacy of declaratory policy becomes more pronounced to Seoul's eyes. Without substantive enhancements to nuclear sharing, decision-making integration, and credible escalation pathways, declaratory reassurances alone are unlikely to suffice, as they have not proven to hitherto, in reassuring Seoul. Indeed, the kind of assurance given by the US to South Korea, even though enhanced at the declaratory and partially at procedural level during the course of 2023 and 2024, did not turn out to be enough to halt strong proliferation desires among South Koreans.

CHAPTER III

SOUTH KOREA'S NUCLEAR OPTIONS: SHIFTING STRATEGIES ACROSS THREE ADMINISTRATIONS

South Korea faces a critical dilemma regarding its national security and defense. Domestically, political leaders and security experts remain divided between maintaining strong nonproliferation commitments and advancing the country's nuclear deterrence capabilities. Debates surrounding the redeployment of Tactical Nuclear Weapons (TNWs), the acquisition of nuclear-powered submarines (SSNs), the transition of wartime Operational Control (OPCON) from the Combined Forces Command (CFC) to South Korean leadership, and even the development of indigenous nuclear weapons have become recurring topics in national security discourse. However, despite these ambitions, Seoul has not yet secured U.S. approval for any of these measures and remains bound to its nonproliferation commitments.

This chapter examines South Korea's nuclear strategies at its intersection with alliance credibility through the analysis of three administrations—Park Geun-hye (2013–2017), Moon Jae-in (2017–2022), and Yoon Suk-yeol (2022–2024)—and their interactions with respective U.S. administrations: Barack Obama (2008–2016), Donald Trump (2016–2020), and Joseph Biden (2020–2024). By comparing these periods, we reveal how internal political dynamics and divergent U.S. policies have shaped Seoul's navigation along the proliferation spectrum outlined in Chapter I. Ultimately, this chapter will argue that South Korea has repeatedly explored multiple pathways along the proliferation spectrum, leveraging within alliance with the U.S. while simultaneously enhancing its nuclear latency capabilities.

The chapter is organized into five sections, the first will recollect public support for nuclear weapons acquisition, then, the three following paragraphs will be dedicated to each South Korean administrations, followed by a concluding section that reflects recurring patterns identified in the analysis, particularly the limited role of the NPT in proliferation decisions. Each section begins by examining the policies adopted by the respective administration toward the regime in Pyongyang, considering the contemporary developments in North Korea's nuclear program and its nuclear tests. It then explores alliance-level dynamics, analyzing how each administration managed defense and deterrence in relation to the U.S., including changes to security agreements, deterrence mechanisms, and any points of friction or strategic divergence. Finally, the perspectives of high-ranking officials in the National Assembly and leading experts from the country's major think tanks on nuclear weapons acquisition and other nuclear initiatives are presented. This aims to shed light on South Korea's nuclear strategies and assess whether Seoul pursued latent proliferation within the framework of the ROK-U.S. alliance, focusing on domestic nuclear capabilities and hedging behaviors.

Before analyzing each administration's strategic choices, it is essential to have an idea of South Korea's political structure and the key ideological positions of its major parties. Domestic politics play a crucial role in shaping foreign and security policy, as different administrations have historically pursued divergent approaches toward the U.S. alliance, nuclear strategy, and engagement with North Korea. By understanding these internal dynamics, it will be easier to assess how South Korean presidents approached their U.S. and North Korean counterparts and how domestic political shifts influenced nuclear policy debates.

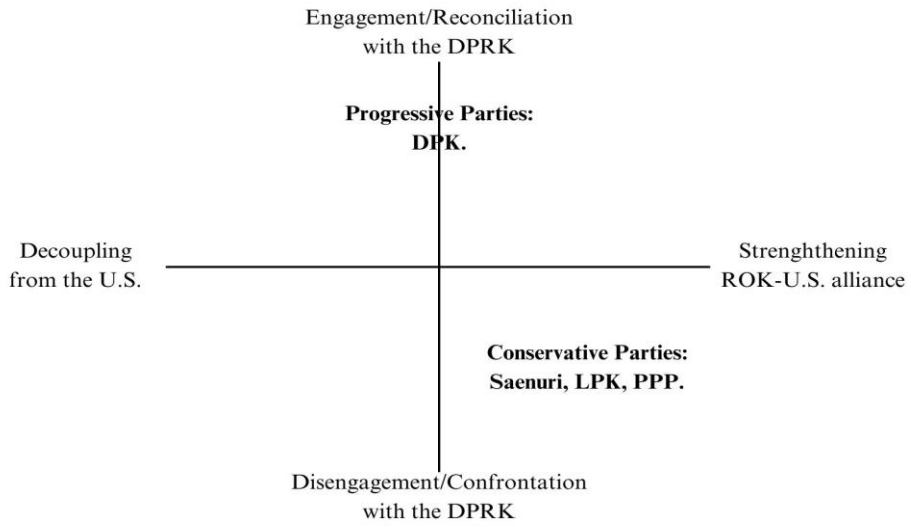

Figure 3: South Korean Domestic Political Parties Classification in Relations with the U.S. and the DPRK.

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Despite seeming counterintuitive at first glance, recent South Korean administrations have tended to align more effectively with U.S. governments led by what could be considered the 'opposing' ideological camp. Conservative administrations in Seoul have generally worked more smoothly with Democratic U.S. presidents, as demonstrated by the Park Geun-hye-Obama and Yoon Suk-yeol-Biden relationships. Conversely, progressive South Korean leader Moon Jae-in, found a more conducive working relationship with Republican President Donald Trump, on certain respects. However, this pattern has not always been held historically and is influenced by specific policy preferences and geopolitical strategies.

[355] The above representation has been partly taken from a lesson on inter-Korean relations at Yonsei University by Professor Kim Jung. While it might appear overly simplistic and not consider temporary variables before the administrations analyzed, it is intended as a plot to facilitate the understanding of the Chapter for the sake of the analysis included in this dissertation.

The underlying reason for this alignment lies in the differing approaches to North Korea and the alliance with the United States. Progressive administrations in South Korea have traditionally sought engagement with North Korea, believing in dialogue and partial concessions to stabilize inter-Korean relations and reduce tensions on the Peninsula. This policy orientation has often come with an interest in achieving greater autonomy from U.S. influence in security affairs, though not at the cost of dismantling the alliance itself. The alliance remains a cornerstone of South Korean foreign policy, but progressives aim to recalibrate the relationship, emphasizing sovereignty in defense matters and reducing dependence on Washington.

Trump's presidency coincided with Moon's administration and proved to be an anomaly in U.S. foreign policy toward North Korea. Unlike his predecessors, Trump took a highly personalistic, top-down approach to diplomacy, holding unprecedented summits with Kim Jong-un and showing an openness to direct negotiations. While these efforts ultimately yielded no tangible denuclearization commitments, they provided Moon Jae-in with an opportunity to push for inter-Korean rapprochement, aligning with his engagement policy.

On the other hand, South Korean conservatives have historically maintained a hardline stance on North Korea, portraying it as an existential threat and leveraging security concerns for domestic political support. This approach has aligned more closely with Democratic U.S. administrations, which have traditionally pursued more rigid policies, such as Obama's "strategic patience" and Biden's "pragmatic, practical diplomacy." Both strategies emphasized avoiding direct engagement with Pyongyang unless it committed to the policy of Complete, Verifiable, and Irreversible Dismantlement (CVID)—a demand that North Korea has rejected, more or less explicitly. Consequently, while conservative South Korean administrations like Yoon's favor strengthening military ties with Washington, their preference for deterrence over diplomacy aligns with the democratic administration's reluctance to engage with

Pyongyang absent substantial preconditions. While not absolute, this pattern of cross-ideological alignment offers a useful framework for understanding the interplay of domestic politics, geopolitical strategies, and alliance priorities, shaping the contours of cooperation in complex and sometimes unexpected ways.

3.1 Public Support for Nuclear Weapons Acquisition

South Korea's nuclear policy debate has been increasingly shaped by a shifting domestic consensus, driven by doubts in U.S. commitment, by North Korea's expanding nuclear posture, rising public threat perceptions not only of Pyongyang but also of Beijing, and broader aspirations for South Korea's global status. Over the past decade, public support for acquiring nuclear weapons has consistently ranged between fifty and seventy percent, but recent surveys suggest it now exceeds 70 percent.[356] According to the Chicago Council on Global Affairs, this surge reflects concerns beyond North Korea, with respondents citing the need to defend against diverse threats, enhance South Korea's international prestige, and counter Pyongyang's growing nuclear arsenal.[357] This persistent undercurrent of public dissatisfaction underscores a growing sense that U.S. extended deterrence may no longer be enough to guarantee South Korea's security.[358]

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[356] Asan Institute for Policy Studies, "South Koreans and Their Neighbors," April 2023, https://en.asaninst.org/contents/south-koreans-and-their-neighbors-2023/.

[357] Toby Dalton, Karl Friedhoff, and Lami Kim, "Thinking Nuclear: South Korean Attitudes on Nuclear Weapons," *The Chicago Council on Global Affairs*, February 21, 2022, https://globalaffairs.org/research/public-opinion-survey/thinking-nuclear-south-korean-attitudes-nuclear-weapons.

[358] Jennifer Ahn, "The Evolution of South Korea's Nuclear Weapons Policy Debate," *Council on Foreign Relations*, August 16, 2022, https://www.cfr.org/blog/evolution-south-koreas-nuclear-weapons-policy-debate.

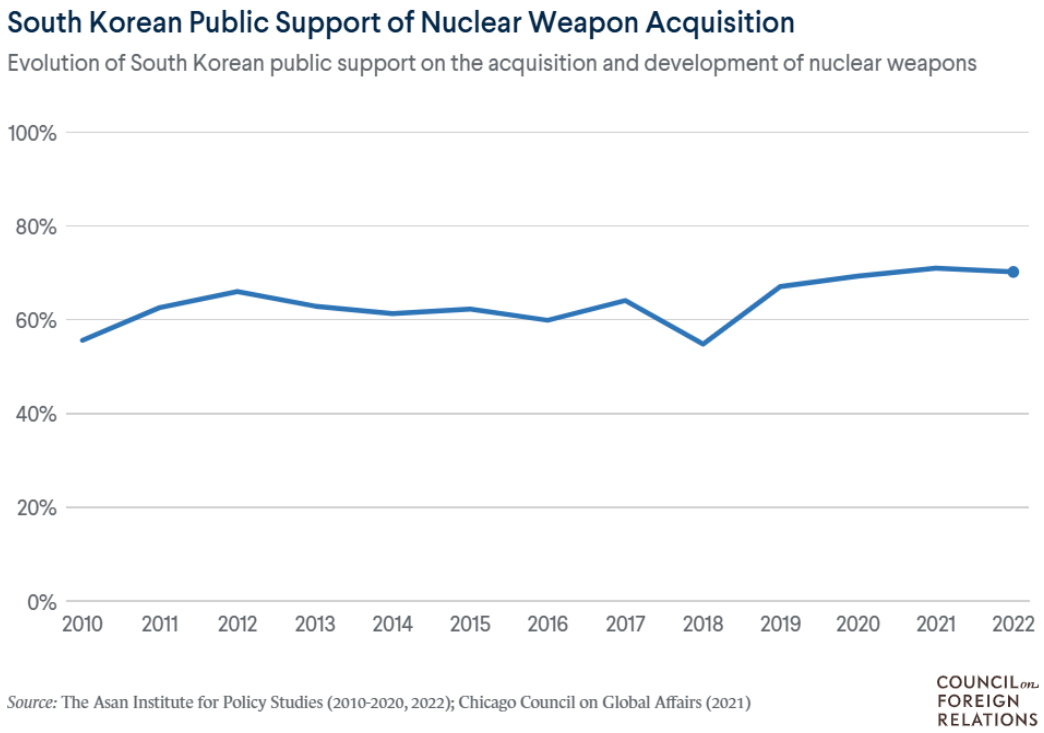

Figure 4: South Korean Public Support for Nuclear Weapons Acquisition, taken from Ahn, "The Evolution of South Korea's Nuclear Weapons Policy Debate," Council on Foreign Relations.

A survey conducted in the wake of the 2013 test revealed that 66% of South Koreans supported developing an indigenous nuclear weapons program—reflecting a ten-percentage-point increase from a similar poll in 2010.[359] During President Park Geun-hye's tenure (2013–2017), public support for South Korea developing its own nuclear weapons was stable, with a percentage of South Koreans supporting the idea of an independent nuclear arsenal shifting between 61 and 66, slightly declining at the

[359] Jiyoon Kim and Karl Friedhoff, "The Fallout: South Korean Public Opinion Following North Korea's Third Nuclear Test," *Asan Institute for Policy Studies*, February 24, 2013, https://en.asaninst.org/contents/issue-brief-no-46-the-fallout-south-korean-public-opinion-following-north-koreas-third-nuclear-test/.

end.[360] This was the moment in which support for nuclear weapons surged in the aftermath of the DPRK's third and fourth nuclear tests in 2013 and 2016 respectively.

During Moon Jae-in's administration (2017-2022), according to the 2024 Korea Institute for National Unification (KINU) survey, public opinion on the necessity of South Korea possessing nuclear weapons peaked at 71.3% in 2021, then decreased to 69% in 2022.[361] From March 2019 onward, South Korean public support for developing an independent nuclear arsenal has remained consistently high, ranging between 64.3 percent and 70.9 percent. The most recent survey, conducted in April 2024, recorded the highest level of support to date, with 70.9 percent in favor and 27.4 percent opposed. As of the same April 2024 survey, 63.8 percent of South Koreans expressed support for the reintroduction of U.S. tactical nuclear weapons to the Korean Peninsula, while 33.5 percent were opposed.

Since the Asan Institute began tracking public opinion on this issue in 2013, a majority has consistently favored redeployment, with the only exception occurring in March 2019 when public sentiment was evenly divided—46 percent in support and 47.9 percent opposed. From 2020 onwards, support has remained relatively stable, fluctuating between a low of 59 percent and a high of 63.8 percent. Notably, this

[360] As it can be seen in the graph taken from Ahn, "The Evolution of South Korea's Nuclear Weapons Policy Debate" for the Council on Foreign Relations (359).

[361] Korea Institute for National Unification, "KINU's Announcement of the Result of the 2024 KINU Unification Survey: North Korea's Two-State Claim / US Presidential Election Outlook and ROK-US Relations," June 27, 2024, https://www.kinu.or.kr/eng/board/view.do?code=78h7R6ucKsuM&idx=24481&nav_code=eng1678858138.

enduring preference persists despite advancements in U.S.-ROK security cooperation.[362]

Scholars found out that public support for nuclear armament, which was already considerable, has grown further since February 2022. A synthesis of four public-opinion surveys conducted by South Korean research institutions found that 66.1% of respondents favored independent nuclear development—an increase of 4.7 percentage points from previous surveys. This shift aligns with the Yoon Suk-yeol administration's "peace through strength" policy, which has significantly reshaped nuclear policy discourse.[363]

It is important to note that the surveys reported in the paragraph consistently indicate that the South Korean public has favored the development of an independent nuclear arsenal over the redeployment of U.S. tactical nuclear weapons (TNWs) to the country. The Chicago survey from 2022 also provides the same conclusion, with 71 percent support South Korea obtaining its own nuclear weapons, and 56 percent back the stationing of U.S. nuclear arms in the country, thus indicating a clear preference when respondents are asked to choose between the two. In that case, 67 percent favored the indigenous arsenal, whereas only 9 percent favored U.S. deployment. Notably, 40 percent opposed the presence of U.S. nuclear weapons, compared to just 26 percent who were against South Korea developing its own.[364]

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[362] Asan Institute for Policy Studies, "South Koreans and Their Neighbors," May 2024, https://en.asaninst.org/contents/south-koreans-and-their-neighbors-2024/.

[363] Tongfi Kim and Do Young Lee, "Continuity and changes: the effects of Russia's war against Ukraine on Japanese and South Korean nuclear-weapons discourse," *The Nonproliferation Review* 30, no. 4-6 (2023): 267.

[364] Dalton, Friedhoff, and Kim, "Thinking Nuclear."

Ultimately, the combination of rising populism in South Korean society and deeply rooted pro-nuclear sentiment could heighten the risk of escalating nuclear tensions, since, even in the absence of direct provocations from North Korea, a majority of South Koreans continue to believe that the country should develop its own nuclear weapons. Moreover, "pro-nuclear sentiments among ordinary South Koreans have not vanished [...], regardless of the official position of the South Korean government."[365] When faced with consequences such as potential U.S. troop withdrawals and economic sanctions, only 11 percent of the respondents in the Chicago Council survey changed their support for nuclear weapons development.[366]

3.2 Nuclear Developments under President Park Geun-hye

President Park Geun-hye was the ROK's first female president, the first elected with a majority vote since the establishment of democratic rule, and a member of the conservative Saenuri Party (새누리당). She governed the country from 2013 to 2017, when she was ultimately impeached due to controversy regarding a massive corruption and influence-peddling scandal involving her confidante.[367] Despite Park's unfortunate end, her presidency was characterized by a commitment to strengthening the U.S.-ROK alliance, following the course established by her predecessor Lee Myung-bak, while simultaneously seeking improved relations with China[368] and recalibrating North

[365] Se Young Jang, "South Koreans' Strong Support for Nuclear Weapons," *ISPI*, March 8, 2022, https://www.ispionline.it/en/publication/south-koreans-strong-support-nuclear-weapons-33989.

[366] See 365.

[367] BBC, "South Korea president Park Geun-hye ousted by court," March 10, 2017, https://www.bbc.com/news/world-asia-39202936.

[368] Jaeho Hwang, "The ROK's China Policy under Park Geun-hye: A New Model of ROK-PRC Relations," *The Brookings Institution*, August 14, 2014,

Korea policy.[369] Entering office with the backing of a parliamentary majority, Park was well-positioned to pursue her foreign policy agenda but faced legislative impasse in South Korea's National Assembly by the opposition party, the Democratic United Party (DUP). However, she maintained an overall high approval rating of more than thirty percent until the scandal broke out in October 2016.[370]

Acknowledging that a strong U.S.-ROK alliance remained the cornerstone of South Korea's security and a precondition for achieving peace on the Korean Peninsula, Park sought to distinguish her foreign policy from that of her predecessor, Lee Myung-bak, by slightly recalibrating South Korea's approach to China and North Korea. On North Korea, Park recognized the limitations of both the hardline stance under Lee and the engagement policies of earlier administrations (Kim Dae-jung 1998-2003 and Roh Moo-hyun 2008-2013). Thus, she proposed a "Trustpolitik (한반도 신뢰프로세스)" that blended pressure with cooperation, seeking principled engagement, but still implementing a firm response to the North's provocations.[371] According to the Asan Institute, the policy was a step-by-step "defensive policy in

https://www.brookings.edu/articles/the-roks-china-policy-under-park-geun-hye-a-new-model-of-rok-prc-relations/.

[369] Ihn-hwi Park, "The Park Geun-hye Presidency and the Future of the U.S.-South Korea Alliance," *Council on Foreign Relations*, March 2013, https://www.cfr.org/report/park-geun-hye-presidency-and-future-us-south-korea-alliance.

[370] Sung Deuk Hahm and Uk Heo, "The First Female President in South Korea: Park Geun-hye's Leadership and South Korean Democracy," *Journal of Asian and African Studies* 53, no. 1 (August 2017): 1.

[371] Geun-hye Park, "A New Kind of Korea. Building Trust Between Seoul and Pyongyang," *Foreign Affairs*, September/October 2011, https://www.foreignaffairs.com/articles/northeast-asia/2011-09-01/new-kind-korea.

response to inter-Korean tensions created by North Korea's provocations."[372] However, some experts on North Korean affairs and South Korean foreign policy have expressed perplexity on the meaning of the policy as a whole.[373]

On May 8, 2013, during an address to the U.S. Congress, President Park asserted that "with regard to North Korea's bad behavior and its provocations, the international community must speak with one voice, and consistently send a firm message that they will not stand for it and that North Korea's actions are in breach of international norms."[374] This was also reflected in the 2014 Defense White Paper, the first under her leadership, which officially acknowledged North Korea as a nuclear weapons possessing state and having HEU capabilities, marking a significant shift in terminology by the ROK.[375] Thus, despite initial efforts to engage Pyongyang, North Korea's continued nuclear tests and missile launches posed significant challenges to Park's Trustpolitik.[376] In the 2015 U.S.-ROK Joint Statement on North Korea both

[372] Kang Choi, Jiyoon Kim, Hankwon Kim, Youngshik Bong, and Jaehyon Lee, "Evaluating President Park Geun-Hye's Foreign Policy in its 1st Year," *Asan Institute for Policy Studies*, February 24, 2014, 2, https://en.asaninst.org/wp-content/uploads/2014/03/IssueBrief_2014_08_Eng.pdf.

[373] Aidan Foster-Carter, "A Long & Winding Road: South Korea's "Nordpolitik" (Part I)," *38 North*, March 16, 2014, https://www.38north.org/2014/03/afostercarter032614/.

[374] "South Korean President to Address US Congress," *VOA News*, March 8, 2013, https://www.voanews.com/a/south-korean-president-to-address-us-congress/1656706.html.

[375] Korea Chair, "South Korea 2014 Defense White Paper Highlights DPRK Nuclear Threats," *CSIS*, January 6, 2015, https://www.csis.org/analysis/south-korea-2014-defense-white-paper-highlights-dprk-nuclear-threats.

[376] See 373.

nations reaffirmed their refusal to accept North Korea as a nuclear-weapon state, and restated their commitment to CVID.[377]

In response to escalating tensions, particularly the DPRK's satellite launch in February 2016, her administration took decisive actions, such as the temporary shutdown of the Kaesong Industrial Complex (KIC), a joint inter-Korean economic project started in 2004, which has hitherto remained closed.[378] Eventually, following North Korea's fifth nuclear test in September 2016, the Park administration unveiled the third pillar of its conventional deterrence triad, the Korean Massive Punishment and Retaliation (KMPR) strategy.[379] This signaled a more aggressive stance towards the North, particularly for the KMPR's countervalue purpose of annihilating the elites of the regime.[380]

Park's views as far as the alliance with the U.S. was concerned were towards consolidation, in continuum with the strengthening that occurred during her predecessor, Lee Myung-bak, administration. Indeed, White House officials said the meeting between Park and Obama in 2013 was highly symbolic and meant to reaffirm

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[377] The White House, *2015 United States-Republic of Korea Joint Statement on North Korea*, October 16, 2015, https://obamawhitehouse.archives.gov/the-press-office/2015/10/16/united-states-republic-korea-joint-statement-north-korea.

[378] Peter Makowsky, Jenny Town, and Iliana Ragnone, "Kaesong Industrial Complex: A Tortured History and Uncertain Future," *38 North*, September 4, 2024, https://www.38north.org/2024/09/kaesong-industrial-complex-a-tortured-history-and-uncertain-future/.

[379] Eo-young Ha, "South Korea announces "Massive Punishment and Retaliation" in response to fifth nuke test," *Hankyoreh*, September 13, 2016, https://english.hani.co.kr/arti/english_edition/e_northkorea/761301.html.

[380] MND, *2016 Defense White Paper*.

the U.S. commitment to the defense of South Korea.[381] The President aligned her administration closely with U.S. priorities on global issues such as climate change, counterterrorism, and economic stability, trying to reinforce the perception of a strong and stable alliance underpinned by shared interests. In the first year of Park's administration, during the October 2013 45th Security Consultative Meeting, the Minister of Defense announced the ROK-U.S. Tailored Deterrence Strategy (TDS), formalizing for the first time the framework for combined deterrence.[382] Furthermore, at the 2+2 Ministerial Dialogue in 2016, the countries created the Extended Deterrence Strategy and Consultation Group (EDSCG).

At the beginning of her term, Park supported the planned transfer of wartime operational control (OPCON) from the CFC to the Forces of the Republic of Korea (ROKA) in 2015, stressing that the transition should not undermine South Korea's defense posture. However, as it was already mentioned in Chapter II, the OPCON transition plan was indefinitely postponed in 2013 due to rising risks to the allies' defense and deterrence caused by the DPRK's nuclear tests.[383] Park and Obama agreed

[381] Robert A. Manning, "Park-Obama Summit Bolsters US-ROK Alliance, Impacts Northeast Asia," *Atlantic Council*, May 13, 2013, https://www.atlanticcouncil.org/blogs/new-atlanticist/parkobama-summit-bolsters-usrok-alliance-impacts-northeast-asia/.

[382] U.S. Department of Defense, *Joint Communiqué. The 45th ROK-U.S. Security Consultative Meeting*, October 2, 2013, https://dod.defense.gov/Portals/1/Documents/pubs/Joint%20Communique_%2045th%20ROK-U.S.%20Security%20Consultative%20Meeting.pdf.

[383] "Not a Sovereignty Issue," *ISDP*, April 2021.

to adopt the Condition-based OPCON transition plan (COPT) at the time of the 47th SCM in 2015.[384]

Under Park's tenure, one of the recent most controversial defense decisions in South Korean security policy was taken: the deployment of the Terminal High Altitude Area Defense (THAAD) system in the county of Seongju, 200 kilometers Southeast from Seoul.[385] The decision to deploy the U.S.-made THAAD missile defense system was officially announced in July 2016, prompted by increasing concerns over North Korea's advancing missile and nuclear capabilities. The system was framed as a defensive measure to protect South Korea from the North's missile threats, but experts have seen the urgent move more as an attempt to solidify U.S. support following the deterioration of inter-Korean relations.[386]

The THAAD system, which began to be installed in the first months of 2017, was extremely controversial for state-actors in Northeast Asia. Among these, the PRC was the most vocal opponent, as it viewed its radar capabilities as a potential tool for U.S. surveillance into Chinese territory.[387] Indeed, the PRC responded with informal economic sanctions and boycotts of South Korean products and businesses, and employed tourism restrictions, severely damaging sectors of the ROK's export

[384] Johannes Nordin, "Taking Back Control: South Korea and the Politics of the OPCON Transfer," *Institute for Security and Development Policy*, January 30, 2020, https://isdp.eu/wp-content/uploads/2020/01/South-Korea-and-the-Politics-of-OPCON-Transfer-30.01.20.pdf.

[385] "THAAD on the Korean Peninsula," *Institute for Security and Development Policy*, October 2017, https://www.isdp.eu/publication/korea-thaad/.

[386] Hyung-A Kim, "South Korea's THAAD crisis," *East Asia Forum*, September 9, 2016, https://eastasiaforum.org/2016/09/09/south-koreas-thaad-crisis/.

[387] Ibid.

economy.[388] However, the main reason for which the deal was controversial even within South Korea was due to THAAD potential to make the country a frontline target between the great powers' rivalry. The deployment of the system divided South Korean public opinion and spurred social upheaval, particularly in the county where the system was deployed due to lack of previous consultations.[389] The issue of THAAD deployment in the county of Seongju sparked further debate since the position was strategically chosen to protect major military bases and nuclear plants, whereas the area of Seoul, which hosts almost half of the entire South Korean population,[390] was not covered.[391]

Despite cooperation in missile defense, certain alliance-related challenges emerged during Park's tenure, including negotiations over host-nation support for U.S. forces[392] and the renegotiation of the 1974 U.S.-ROK nuclear cooperation agreement to solve South Korea's spent fuel problem.[393] The new 123 Agreement was originally scheduled to expire in March 2014, and extended for two additional years due to

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[388] "China reacts with anger, threats after South Korean missile defense decision," *Reuters*, February 28, 2017, https://www.reuters.com/article/world/china-reacts-with-anger-threats-after-south-korean-missile-defense-decision-idUSKBN16709W/.

[389] "THAAD on the Korean Peninsula," *ISDP*.

[390] According to the Housing Census of the Korean government (https://kostat.go.kr/board.es?mid=a20107020000&bid=11739&act=view&list_no=370994&tag=&nPage=1&ref_bid=), as of November 1st, 2017, the population of South Korea amounted to 51,420,000 million persons, with the population of the Seoul Capital Area accounting for 49.6% of the total population of the country.

[391] Kim, "South Korea's THAAD crisis."

[392] USFK, Special *Measures Agreement*, February 2, 2014, https://www.usfk.mil/Media/Newsroom/News/Article/600787/special-measures-agreement/.

[393] South Korea faces a shortage of radioactive waste storage and has planned to address this through a pyroprocessing facility.

disagreements over its terms during negotiations. The primary challenge in the U.S.–South Korea negotiations have been reconciling the differing priorities and approaches of both countries. At this time, policymakers and commentators had also reiterated demands for South Korea to reprocess spent reactor fuel for plutonium, similar to Japan, which could have enabled South Korea to accelerate nuclear weapons production in the case of nuclear pursuit.[394] However, discovery that pyroprocessing is comparable to reprocessing led to a struggle between the Obama administration and Park's government during the 123 discussions.[395]

For the U.S., the discussions were technical, driven by regional and global concerns around nonproliferation under Obama's administration, which was particularly keen on preventing the spread of ENR technology. In contrast, South Korea, pressured for energy security, with the country's nuclear research community arguing that ENR technology was essential for achieving the goal. The issue took a rather political turn as officials in Seoul viewed the concession of ENR capabilities, which South Korea allegedly needed, as a proof of U.S. commitment to the country and thus to the alliance. Furthermore, during the negotiations for the 123 Agreement, South Korea perceived itself as being treated unequally, feeling at a disadvantage in comparison to Japan, particularly given the U.S.'s agreement to allow Japan a PUREX reprocessing facility.[396] Haggard posited that "the complexities of the negotiations

[394] Kang, "A Nuclear South Korea Would Be a Mistake."

[395] Jungmin Kang and Frank von Hippel, "Why joint US-South Korean research on plutonium separation raises nuclear proliferation danger," *The Bulletin of the Atomic Scientists*, January 13, 2022, https://thebulletin.org/2022/01/why-joint-us-south-korean-research-on-plutonium-separation-raises-nuclear-proliferation-danger/.

[396] Robert A. Borrelli, "The USA-ROK 123 Agreement," *Nuclear Policy Working Group UC Berkeley*, November 23, 2014, https://npwg.berkeley.edu/blog/the-usa-rok-123-agreement/.

mirror the larger state of the alliance [...] Particularly from the Korean perspective, the negotiations have tested whether Seoul will be treated as an equal partner."[397]

As explained in Chapter I, this was the time when Seoul proposed pyroprocessing development as a solution to concerns by the U.S.[398] Kim Duyeon of the Carnegie Endowment at the time asserted that the U.S. did not "want to jeopardize the global nonproliferation regime or set unwanted precedents." At the end, the negotiators from the Park and Obama administration reached an agreed revision in 2015, and extended it for twenty plus five years, granting South Korea permission to 20% uranium-235 enrichment, and establishing the High-Level Bilateral Commission for future ENR discussions. These issues highlighted the friction between South Korea's desire to assert its strategic interests as a nuclear-energy power and its overall status within the asymmetric ROKUS alliance.

For what concerns political support for an independent nuclear deterrent during Park's administration, officials in the South Korean National Assembly have voiced their preference for such a development on each occasion following the North Korean nuclear tests in 2013, and twice in 2016. While the government maintained its commitment to non-proliferation, segments of the public and some policymakers advocated reconsidering this stance to bolster national security. In 2012, discussions regarding South Korea's potential acquisition of nuclear weapons remained largely behind closed doors. These debates centered on two paths: the possible redeployment

[397] Stephan Haggard, "The 123 (Dis)agreement," *PIEE*, May 8, 2013, https://www.piie.com/blogs/north-korea-witness-transformation/123-disagreement.

[398] Duyeon Kim, "Beyond the Politics of the U.S.–South Korea 123 Agreement," *Carnegie Endowment for International Peace*, October 29, 2014, https://carnegieendowment.org/research/2014/10/beyond-the-politics-of-the-us-south-korea-123-agreement.

of U.S. tactical nuclear weapons to the Peninsula and the pursuit of an indigenous nuclear weapons program.[399]

After North Korea's nuclear test in February 2013, the previously discreet debate on South Korea's nuclear development erupted into the public sphere, with several members of the National Assembly, four of the leading Saenuri Party, publicly advocating for an independent nuclear arsenal.[400] At the time, Chung Mong-joon, former leader of Saenuri Party, argued that it was time for South Korea to withdraw from the NPT and keep pace with the DPRK's nuclear development.[401] The same voices contended that South Korea should no longer rely solely on external security guarantees but should assume full responsibility for its own defense—ultimately, through nuclear armament.

The officials in favor of South Korean acquisition of nuclear weapons increased in number and reach after the DPRK's forth successful nuclear test in 2016, with floor leader of Saenuri's Party in the National Assembly at the time, Won Yoo-chul, saying that the country needed to "think about [its] own survival strategy and countermeasures that include peaceful nuclear and missile programs for the sake of self-defense."[402] For certain politicians, like then-Saenuri Party Representative Kim Jung-hoon, the term appeared to serve as 'coded language' for a nuclear hedging strategy, primarily involving the capability to conduct pyroprocessing.[403] This approach further aligned

[399] Kim and Friedhoff, "The Fallout: South Korean Public Opinion."

[400] Park, "The Park Geun-hye Presidency."

[401] David E. Sanger, "In U.S., South Korean Makes Case for Nuclear Arms," *The New York Times*, April 9, 2013, https://www.nytimes.com/2013/04/10/world/asia/in-us-south-korean-makes-case-for-nuclear-arms.html?_r=0.

[402] Myo-ja Ser, "Saenuri's floor leader calls for a nuclear South," *Korea JoongAng Daily*, https://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3015115.

[403] See 401.

with Seoul's push to secure U.S. backing for extending the range of South Korea's ballistic missiles,[404] as well as growing support among some politicians and media commentators for increased sovereignty in South Korea's nuclear policies.

It is also noteworthy that during Park's tenure, repeated calls by South Korean officials for an independent nuclear deterrent—or, alternatively, the permanent deployment of U.S. tactical nuclear weapons (TNWs) or ballistic missile submarines (SSBNs)—were often framed as contingent upon the confirmation of North Korea possessing a fully developed nuclear arsenal. Until this point, renewed political support for nuclear armament had consistently surfaced in the wake of North Korea's nuclear tests in 2009, 2013, and 2016. The primary driver behind these views was the growing fear among some South Koreans that, once North Korea achieved the capability to target the U.S. homeland with nuclear weapons, the ROK-U.S. alliance could face decoupling, leaving South Korea vulnerable.[405] The underlying question has always remained the same: would the United States sacrifice Washington to defend Seoul, in the case that the Northern enemy is capable of striking both? This persistent uncertainty and concern have driven South Korea's push to secure its defense capabilities independently, ensuring it is not solely reliant on U.S. commitments.

Ultimately, during Park Geun-hye's administration, South Korea pursued a range of strategies to enhance its nuclear latency capabilities within the framework of its asymmetric alliance with the United States. These efforts reflected a nuclear hedging strategy, as seen in the contentious negotiations over the 123 Agreement, which ultimately allowed limited uranium enrichment and established mechanisms for further

[404] See missile range negotiations at page 84.

[405] Toby Dalton, Sunggee Byun, and Sang Tae Lee, "South Korea Debates Nuclear Options," *Carnegie Endowment for International Peace*, April 27, 2016, https://carnegieendowment.org/research/2016/04/south-korea-debates-nuclear-options?lang=en.

discussions on nuclear energy technologies. While the government remained formally committed to nonproliferation, political debates and public discourse increasingly voiced support for more autonomous defense measures, including nuclear armament. These developments highlight how South Korea, constrained by its alliance dynamics and pressured by North Korean threats, sought to expand its strategic options along the proliferation spectrum.

3.3 Moon's Rapprochement with the DPRK and Search for Autonomy

In the wake of President Park Geun-hye's impeachment on March 10, 2017, South Korea experienced significant political unrest, marked by the Candlelight Revolution (박근혜 정부 퇴진 운동 or 촛불집회)—a series of mass protests demanding governmental accountability.[406] An expedited presidential election was held two months after the impeachment, where Moon Jae-in of the Democratic Party of Korea (민주당) secured the presidency with 41.09% of the vote. President Moon undertook a significant reorientation of the country's foreign policy since the former conservative administrations (Park and Lee), particularly concerning North Korea and the United States.

Towards the regime in Pyongyang, President Moon has actively pursued a policy of engagement, renowned as the Korean Peninsula Peace Process (한반도 평화 프로세스), since the first months of office in the Blue House (청와대), believing that it could lead to improved relations and regional stability in Northeast Asia through

[406] Alexis Dudden, "Revolution by Candlelight: How South Koreans Toppled a Government," *Dissent Magazine*, Fall 2017, https://www.dissentmagazine.org/article/revolution-by-candlelight-how-south-koreans-toppled-a-government/.

balance and autonomy.[407] His strategy, which aimed at a reintegration of the Peninsula where South Korea would not be entrapped by great powers interests, has included multiple summits with North Korean leader Kim Jong-un in an effort to foster inter-Korean cooperation. Moon even changed the names of two components of the South Korean conventional deterrence triad, renaming the Kill Chain and Park's KMPR as Strategic Strike System.[408] For these reasons, his approach faced harsh domestic criticism, particularly from the conservative opposition, that viewed it as overly conciliatory.[409] Nevertheless, as Botto argues "Moon Jae-in has aspired to transform the geopolitical environment of Northeast Asia, starting rather cautiously in 2017, acting boldly in 2018, struggling with an impasse and new pressure in 2019, and battling with a pandemic ripping through the region and the world in early 2020."[410]

Moon sought to de-escalate tensions with Pyongyang through peace-building initiatives, exemplified by three inter-Korean summits.[411] The summits brought two highly symbolic declarations: the 2018 Panmunjom Declaration, which outlined the goal of denuclearization and "a nuclear free Korean Peninsula"[412] and the Pyongyang

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[407] Kathryn Botto, "Moon Jae-in: Putting North Korea at the Center," in *KEI Joint U.S.-Korea Academic Studies* 31, ed. Gilbert Rozman (Washington, DC: Korea Economic Institute of America, 2020), 84.

[408] ROK Ministry of National Defense, *2018 Defense White Paper* (Seoul: Ministry of National Defense, 2019), 69–70, https://www.mnd.go.kr/user/mnd/upload/pblictn/PBLICTNEBOOK_201907110548253080.pdf.

[409] Mitch Shin, "Has Moon Jae-in's North Korea Peace Process Failed?" *The Diplomat*, May 2022, https://thediplomat.com/2022/05/has-moon-jae-ins-north-korea-peace-process-failed/.

[410] Ibid, 14.

[411] List of inter-Korean summits between Supreme Leader of the DPRK Kim Jong-un and President of the ROK Moon Jae-in: April 27, 2018, at the DMZ, resulted in the Panmunjom Declaration; May 26, 2018, in Pyongyang; September 18-20, 2018, in Pyongyang.

[412] See 286.

Declaration, a path towards cessation of hostilities.[413] These efforts culminated in events like the 2018 PyeongChang Winter Olympics, where the delegations of the two Koreas made a joint entry at the Opening Ceremony of the games wielding a Unified Korea Flag, and played together in the unified women's ice hockey team for the first time in history.[414] Furthermore, they paved the way for the summits between Kim and Trump explained in Chapter II. However, the peace process faltered following the 2019 Hanoi Summit between Kim Jong-un and President Trump, which collapsed over disagreements on denuclearization terms. Subsequent North Korean reprisal of missile tests, after seemingly agreeing to a moratorium, and a lack of substantive follow-through from Pyongyang halted Moon's peace agenda.[415]

While Moon directed most of its efforts in foreign policy towards the engagement with North Korea, he had in parallel to manage the relationship with the PRC and the U.S., first, with Donald Trump until 2020, and second, with Joseph Biden. Overall, observers have agreed that Moon's policies have introduced tensions within the alliance, particularly regarding differing strategies toward Pyongyang and Beijing, and some inherited issues that the Moon's government dubbed as matters of South Korean autonomy. These were the initial suspension and subsequent hesitation in deploying the THAAD system, coupled with the lack of explicit support for the U.S.

[413] The Korea Times, "FULL TEXT Pyongyang Declaration," September 9, 2018, https://www.koreatimes.co.kr/www/nation/2025/02/103_255848.html.

[414] Information taken directly from the exhibition at the Olympic Winter Games PyeongChang 2018 museum in Gangneung, Gangwon province, South Korea.

[415] For a full understanding of Moon's strategy refer to Chung Min Lee and Kathryn Botto, "President Moon Jae-in and the Politics of Inter-Korean Détente," *Carnegie Endowment for International Peace Korea Strategic Review*, 2018, https://carnegie-production-assets.s3.amazonaws.com/static/files/Korean_Strategic_Review_2018_FULL.pdf.

Free and Open Indo-Pacific (FOIP) strategy, which was seen as a strategy of appeasement towards the PRC.

Moon's Peace Process with the North involved close coordination with the U.S., yet it also revealed growing tensions within the alliance, especially when negotiations followed bilaterally between Kim and Trump, "who was distrustful and dismissive of Moon's agenda."[416] With Trump, Moon found a partner willing to engage with North Korea to an unprecedented extent but also an unpredictable ally whose transactional perspective on the alliance brought challenges and uncertainties. Indeed, President Trump played an equally significant role as Moon in contributing to the deterioration of the U.S.–South Korea relations, with his actions and policies bearing substantial responsibility for falling credibility and missed opportunities for much-needed reassurances.[417]

Under President Moon, the debate over the transfer of wartime operational control (OPCON) intensified, as it was framed in terms of national autonomy in South Korea, with many seeing it as essential for full sovereignty and self-reliant defense.[418] President Moon prioritized accelerating the OPCON transfer, aiming for its completion before his departure from office in 2022. In a 2017 address, Moon stated, "when the South has wartime operational control, the North will fear us more, and our armed forces will be trusted more."[419] Despite Moon's intentions, the conditions-based transfer faced challenges, with doubts over South Korea's ability to meet military

[416] Botto, "Moon Jae-in: Putting North Korea at the Center," 95.

[417] Dian, "Trump's Mixed Signals toward North Korea and US-led Alliances in East Asia."

[418] Work, "The Long History of South Korea's OPCON Debate."

[419] Brian Padden, "South Korea Wants Wartime Control of its Military," *VOA News*, September 28, 2017, https://www.voanews.com/a/south-korea-wants-out-of-us-military-control/4047790.html.

readiness standards within his timeline, especially amid shifting security dynamics and alliance concerns.[420]

Instead, primary issues raised by President Trump included demands for a substantial increase in South Korea's financial contributions to the U.S. Forces Korea (USFK) under the Special Measures Agreement (SMA). In 2019, Trump sought a nearly 400% hike, asking Seoul to pay approximately $5 billion annually, almost a fourfold increase from previous agreements.[421] Additionally, it appears that Trump suggested the possibility of withdrawing U.S. troops if South Korea did not comply with these financial demands,[422] something that he would also reassert two years later. This disparaging position severely damaged the alliance's credibility, and thus, the U.S. nuclear extended deterrence in Northeast Asia.

For what concerns the deployment of the THAAD system, initiated under Park's tenure, Moon, who was a longstanding critic of the initiative, initially halted its further deployment. While the two launchers already deployed remained operational, the installation of four additional launchers was delayed pending a thorough review. This decision aligned with criticisms from Moon's campaign supporters, who had been dismayed by the expedited deployment of the THAAD battery and two launchers by

[420] Soo Kim, "U.S.–South Korea OPCON Transition: The Element of Timing," *RAND*, March 31, 2020, https://www.rand.org/pubs/commentary/2020/04/us-south-korea-opcon-transition-the-element-of-timing.html.

[421] Nicole Gaouette, "Trump hikes price tag for US forces in Korea almost 400% as Seoul questions alliance," *CNN*, November 15, 2019, https://edition.cnn.com/2019/11/14/politics/trump-south-korea-troops-price-hike/index.html.

[422] David Choi, "Trump considered 'complete withdrawal' of US troops from South Korea, former defense chief says," *Stars and Stripes*, May 10, 2022, https://www.stripes.com/theaters/asia_pacific/2022-05-10/defense-secretary-mark-esper-memoir-president-trump-south-korea-troops-5954121.html

the USFK just two weeks prior to South Korea's election.[423] In October 2017, Foreign Minister Kang Kyung-wha outlined three key conditions regarding the THAAD deployment, first, that South Korea would not pursue any further THAAD deployments, second, that it would not participate in a U.S.-led integrated missile defense network (BMD), and third, that it would not establish a trilateral military alliance with the United States and Japan, a policy known as the "Three Nos".[424]

During his administration, Moon initiated a nuclear phase-out policy aimed at reducing South Korea's reliance on nuclear energy. This policy involved halting plans for new nuclear power plants and refraining from extending the operation of existing reactors. The objective was to transition towards alternative clean energy sources over time.[425] However, the phase-out policy faced significant opposition from various sectors, including industry stakeholders and political figures, who argued that reducing reliance on nuclear energy could lead to economic drawbacks and energy shortages. This widespread resistance contributed to the policy's limited progress, which was subsequently reversed by Moon's successor, who set a target for nuclear power to supply at least 30% of South Korea's electricity by 2030.[426] Experts conclude that South

[423] Scott S. Snyder, "The Halt of South Korea's THAAD Deployment," *Council on Foreign Relations*, June 12, 2017, https://www.cfr.org/blog/halt-south-koreas-thaad-deployment.

[424] The 'Three Nos' were reversed without exception under Moon's successor, Yoon Seok-yeol, under which the ROK agreed to the deployment of further components of the THAAD system in September 2022 and signed the Camp David declaration in 2023, in Maximilian Ernst, "Who Taught Whom a Lesson? South Korea, the Three Nos and the Limits of Chinese Statecraft," *CSDS*, December 2023, https://csds.vub.be/publication/who-taught-whom-a-lesson/.

[425] Reuters, "South Korea's President Moon says plans to exit nuclear power," June 19, 2017, https://www.reuters.com/article/world/south-koreas-president-moon-says-plans-to-exit-nuclear-power-idUSKBN19A04Q/.

[426] Country Profile: Nuclear Power in South Korea, *World Nuclear Association*.

Korea's nuclear policy under the Moon Jae-in administration demonstrated a pattern of conflicting dynamics. Despite formally adhering to a nuclear phase-out and promoting the denuclearization of the Korean Peninsula as a pillar of its foreign policy engagement with North Korea, South Korea's nuclear capacity grew, and the controversial spent fuel pyroprocessing, continued to be investigated.[427]

For what concerns political support for nuclear weapons, following the DPRK sixth—and most recent—nuclear test on September 6, 2017, the issue of potential nuclear armament in South Korea resurfaced in public discourse and received significant attention in the Korean media. Prominent hard-liner politicians, particularly from the Liberty Korea Party (자유한국당), which at the time formed the opposition to Moon's government, advocated for Seoul to develop its own nuclear arsenal as a means to counterbalance Pyongyang's nuclear capabilities. At the same time, LKP leaders also pushed for the return of U.S. tactical nuclear weapons to South Korean territory.[428] While many analyzed the move of the LKP as a way to gain popular consent after the impeachment of the former President Park, the renovated request for TNWs deployment demanded attention by the American counterpart,[429] particularly in light of the strong support shown by the Korean public.

It was not only limited to the opposition, indeed, under the Trump administration, some commentators in both the U.S. and South Korea advocated for either redeploying U.S. tactical nuclear weapons to South Korea or adjusting dual-

[427] Eunjung Lim, "South Korea's Nuclear Dilemmas," *Journal for Peace and Nuclear Disarmament* 2, no. 1 (2019): 298.

[428] Herim Jo, "Liberty Korea Party demands redeployment of tactical nuclear weapons," *The Korea Herald*, August 16, 2017, https://www.koreaherald.com/article/1422814.

[429] Amy F. Woolf and Emma Chanlett-Avery, *Redeploying U.S. Nuclear Weapons to South Korea: Background and Implications in Brief*, Congressional Research Service, September 14, 2017, https://crsreports.congress.gov/product/pdf/R/R44950.

capable aircraft operations as a strategic signal. During the U.S.–South Korea defense ministerial meeting in August 2017, Defense Minister Song Young-moo mentioned the issue of tactical nuclear redeployment, later stating that South Korean lawmakers and media were strongly pushing for it and that it was an option deserving thorough review.[430] Moreover, at the CSIS-JoongAng Ilbo 2019 Forum in Washington, former South Korean Foreign Minister Song Min-soon[431] stated that South Korea considering independent measures to establish a nuclear balance on the peninsula had become a widely discussed option. His remark highlighted the significant shift even among moderate advocates of nonproliferation.[432]

Alarmed experts have consistently warned that the redeployment of U.S. tactical nuclear weapons to South Korea is entirely non-negotiable, emphasizing its potential to provoke regional instability, trigger an arms race, and strain U.S.–ROK relations by undermining South Korea's nonproliferation commitments. Moreover, logistical challenges, including the complexities of securing and integrating such weapons into South Korea's defense posture, further highlight the impracticality of this approach.[433] However, these concerns have not quelled the ongoing debate, nor have they offered a concrete solution to South Korea's persistent deterrence dilemma.

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[430] Kristensen and Norris, "A history of US nuclear weapons in South Korea," 354, and Ward, "South Korea wants the US to station nuclear weapons in the country."

[431] Song was a member of the democratic party and served under the Roh's government from 2006 to 2008.

[432] Byong-chul Lee, "Don't be surprised when South Korea wants nuclear weapons," *Bulletin of the Atomic Scientists*, October 23, 2019, https://thebulletin.org/2019/10/dont-be-surprised-when-south-korea-wants-nuclear-weapons/.

[433] Richard Sokolsky, "The Folly of Deploying U.S. Tactical Nuclear Weapons to South Korea," *38 North*, December 1, 2017, https://carnegieendowment.org/posts/2017/12/the-folly-of-deploying-us-tactical-nuclear-weapons-to-south-korea?lang=en.

By the end of Moon Jae-in's presidency, many of his key policy goals remained unfulfilled or faced significant setbacks. His engagement-first approach to North Korea lost momentum after the collapse of U.S.–DPRK negotiations in 2019, leaving inter-Korean relations stagnant, ready to deteriorate. At the same time, alliance tensions deepened under Trump's transactional demands, particularly over burden-sharing negotiations, while Moon's push for OPCON transfer stalled due to unmet military conditions. His nuclear phase-out policy faced strong opposition and was eventually reversed, highlighting the limits of his energy agenda. Meanwhile, debates over nuclear deterrence, including the potential redeployment of U.S. tactical nuclear weapons, increased, reflecting growing doubts about extended deterrence. As Moon left office, unresolved security and alliance challenges continued to shape South Korea's strategic outlook.

3.4 Yoon Seok-yeol: Realignment with the U.S. and Normalization of the Nuclear Debate

Under the tenure of President Yoon Suk-yeol of the conservative People Power's Party (국민의힘), inter-Korean relations reached historic lows, with heightened provocations from both sides. By early 2024, experts such as Robert Carlin and Siegfried Hecker began warning of a renewed risk of war on the Korean Peninsula.[434] At the same time, Moon Chung-in, former special adviser on national security and foreign affairs to President Moon Jae-in, argued that Yoon's administration was fundamentally redefining deterrence. Instead of the traditional ROK-U.S. approach of "escalation management," which seeks to control tensions, Yoon's government appeared to embrace "escalation dominance"—a strategy that

[434] Robert L. Carlin and Siegfried S. Hecker, "Is Kim Jong Un Preparing For War?," *38 North*, January 11, 2024, https://www.38north.org/2024/01/is-kim-jong-un-preparing-for-war/.

signals South Korea's willingness to confront North Korea decisively, even at the risk of escalating hostilities.

Yoon's approach to the DPRK must be viewed within the framework of the Unification and North Korea Policy (정부의 통일 대북정책), which was designed to achieve a "Denuclearized, Peaceful, and Prosperous Korean Peninsula" (비핵, 평화, 번영의 한반도).[435] President Yoon's plan involved the "Audacious Initiative" (담대한 구상) aimed at incentivizing North Korea's denuclearization by proposing substantial economic aid, including large-scale food programs, energy infrastructure support, and modernization of trade facilities. However, any positive engagement by the South was contingent upon Pyongyang's commitment to cease its nuclear development and engage in genuine denuclearization efforts.[436] However, the initiative failed to gain traction, as North Korea dismissed the proposal, perceiving it as insincere and conditional, and persevered in its nuclear activities.

The Yoon's government further proposed its idea of Unified Korea in what has been called the August 15 Unification Doctrine, and proposed establishing a working-level consultative body with North Korea.[437] He further increased the build-up in the conventional capabilities of the ROK, as the Ministry of National Defense (MND) announced the establishment of a "strategic command" by 2024, aiming to revitalize

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[435] ROK Ministry of Unification (MOU), *Unification and North Korea Policy of Yoon Suk Yeol Government*, November 21, 2022, https://unikorea.go.kr/books/archive/archive/?boardId=bbs_0000000000000043&mode=view&searchCondition=all&searchKeyword=&cntId=47381.

[436] ROK Ministry of Foreign Affairs (MOFA), *Audacious Initiative*, accessed February 14, 2025, https://www.mofa.go.kr/eng/wpge/m_25501/contents.do.

[437] Hyonhee Shin, "South Korea's Yoon seeks dialogue with North, path to unification," *Reuters*, August 15, 2024, https://www.reuters.com/world/asia-pacific/south-koreas-yoon-offers-working-level-talks-with-north-korea-2024-08-15/.

the "Three Axis" system to counter North Korean missile threats,[438] seeking a 4.5 percent increase on the defense budget,[439] and uncovering a plan to ascend to the fourth position in global arms exports by 2027.[440]

President Yoon Suk-yeol's administration marked a remarkable shift in South Korea's defense policy, as he was the first winning presidential candidate to personally suggest the acquisition of nuclear weapons, or, as a second option, the redeployment of U.S. tactical nuclear weapons to South Korea,[441] something that experts referred to as "nuclear populism."[442] During his 2021 electoral campaign, in an online forum, Yoon stated that he would urge Washington to deploy tactical nuclear weapons or agree to nuclear sharing, a proposal that was promptly dismissed by the U.S. State

[438] Doyeong Jun, "South Korea's Revitalized "Three-Axis" System," *Council on Foreign Relations*, January 4, 2023, https://www.cfr.org/blog/south-koreas-revitalized-three-axis-system.

[439] Yun-hwan Chae, "S. Korea seeks 4.5 pct rise in defense budget for 2024," *Yonhap News Agency*, August 29, 2023, https://en.yna.co.kr/view/AEN20230829001300325

[440] 국방부·산업통상자원부 [Ministry of Defense, Ministry of Trade, Industry and Energy], "K-방산, 2027년까지 세계 점유율 5% 목표…4대 수출국 도약, [K-Defense Industry Targets 5% Global Share by 2027, in A Leap to the Top 4 Exporting Countries]" *대한민국 정책브리핑 [Korea Policy Briefing]*, November 24, 2022, https://www.korea.kr/news/cultureColumnView.do?newsId=148908708.

[441] Sang-hun Choe, "In a First, South Korea Declares Nuclear Weapons a Policy Option," *The New York Times*, January 12, 2023, https://www.nytimes.com/2023/01/12/world/asia/south-korea-nuclear-weapons.html.

[442] Stephen Herzog and Lauren Sukin, "The Dueling Nuclear Nightmares Behind the South Korean President's Alarming Comments," *Carnegie Endowment for International Peace*, January 25, 2023, https://carnegieendowment.org/posts/2023/01/the-dueling-nuclear-nightmares-behind-the-south-korean-presidents-alarming-comments?lang=en.

Department.[443] Additionally, Yoon's endorsement of preemptive strikes against North Korea[444] has sparked criticism and concern among experts and political figures within South Korea. Once he became President, Yoon continued with the unsubstantiated claims: on January 11, 2023, he told officials from South Korea's Defense and Foreign Affairs ministries that if the threat from North Korea escalates, the country might consider deploying tactical nuclear weapons or developing its own.[445] He also stated that if Seoul decided to pursue nuclear armament, it could do so swiftly due to its advanced scientific and technological capabilities.[446]

The repeated comments by the ROK President to develop an indigenous nuclear deterrent drew significant attention and international backlash.[447] Amid rising discussions about nuclear weapons development, the then-Ministry of Unification's Kwon Young-se quickly intervened, declaring on January 29 that such debates were "inappropriate." Shortly thereafter, President Yoon also sought to downplay his earlier comments. In a January 18 interview at the World Economic Forum, he stated that the rational option for Seoul was to fully respect the Nuclear Non-Proliferation Treaty

[443] Brad Roberts, ed., *Deterring a Nuclear-Armed North Korea* (Livermore, CA: Center for Global Security Research, Lawrence Livermore National Laboratory, May 2023), 13. https://cgsr.llnl.gov/sites/cgsr/files/2024-08/230427_CGSR_Deterring_Nuclear_Armed_North_Korea.pdf.

[444] Da-min Jung, "Controversy rises over Yoon's preemptive strike remarks," *The Korea Times*, January 13, 2022, https://www.koreatimes.co.kr/www/nation/2025/02/113_322205.html.

[445] Jeongmin Kim, "FULL TEXT: Yoon Suk-yeol's remarks on South Korea acquiring nuclear arms," *NKPro*, January 13, 2023, https://www.nknews.org/pro/full-text-yoon-suk-yeols-remarks-on-south-korea-acquiring-nuclear-arms/.

[446] See 445.

[447] Global Asia, "A Nuclear South Korea? Arguments, Risks, and Ways Forwards," *Global Asia* 18, no. 1 (March 2023).

(NPT).[448] At the beginning of 2023, one year inside Yoon's tenure, the rhetoric shifted to South Korea as a champion of nonproliferation.

Nevertheless, it was too late, the international community's attention was already firmly locked on the issue. It was also too late to deter a North Korean reaction, which came swiftly and decisively. In an unprecedented move, the DPRK amended its Constitution to officially designate South Korea as a separate and "hostile" state for the first time, reinforcing its stance as a self-declared nuclear weapons state with a preemptive nuclear posture. This marked a major departure from over 30 years of attempted normalization with the U.S., as North Korea accelerated its development of tactical nuclear weapons, increased hypersonic missile tests, and repeated comments on the illegality of the Northern Limit Line (NLL).[449] Further signaling a hardline approach, Pyongyang demolished the last remaining road and railway links to the South and deepened cooperation with Russia, including potential technology transfers—possibly nuclear-related—and allegedly with North Korean troop involvement in the Ukraine conflict alongside Russian forces.

Under President Yoon Suk Yeol, South Korea's policy toward the United States also marked a decisive shift from the previous Moon government, choosing an almost total realignment with Washington's Biden administration. The Biden administration persistently attempted to reinforce the image of the ROK-US alliance through a range of lofty expressions, describing it as "ironclad"[450] in the 2023 Defense Vision of the

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[448] Kelsey Davenport, "South Korea Walks Back Nuclear Weapons Comments," *Arms Control Association*, March 2023, https://www.armscontrol.org/act/2023-03/news/south-korea-walks-back-nuclear-weapons-comments.

[449] See 156.

[450] U.S. Department of Defense, *Defense Vision of the U.S.-ROK Alliance*, November 13, 2023, https://www.defense.gov/News/Releases/Release/Article/3586528/defense-vision-of-the-us-rok-alliance/.

alliance and a "linchpin of regional security"[451] in the newly created Regional Cooperation Framework for U.S.-ROK Alliance Contributions to Security in the Indo-Pacific. The rhetorical emphasis reached such an extent that, during Yoon's state visit to the White House in April 2024, the South Korean President performed a well-known American ballad for the dinner guests.[452]

On a more practical level, this period saw increased and unprecedented developments, among which the celebrated Washington Declaration of April 2023, which established the Nuclear Consultative Group and its interagency table-top simulation.[453] Further, it was the time of the historic Camp David Summit in August 2023, where the U.S., South Korea, and Japan established a trilateral security pact,[454] which South Korea had consistently avoided prior to that, to enhance collective defense and regional stability. The allies further expanded joint military exercises to encompass counter-nuclear initiatives, exemplified by combined air drills involving U.S. B-1B bombers and South Korean fighter jets.[455] Moreover, the rotational deployment of U.S. strategic assets to the Korean Theater of Operations resumed in 2022, after being suspended for a four-year hiatus under Moon. Discussions also emerged regarding the

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[451] U.S. Department of Defense, *Regional Cooperation Framework for U.S.-ROK Alliance Contributions to Security in the Indo-Pacific*, October 30, 2024, https://www.defense.gov/News/Releases/Release/Article/3951831/regional-cooperation-framework-for-us-rok-alliance-contributions-to-security-in/.

[452] Washington Post, "South Korean president sings 'American Pie'," *YouTube* [video], April 27, 2023, https://www.youtube.com/watch?v=u-E6Bk-JHvo.

[453] ROK Ministry of Foreign Affairs (MOFA), *Washington Declaration (20230426)*, April 28, 2024, https://www.mofa.go.kr/eng/brd/m_25772/view.do?seq=14&page=1.

[454] See 328.

[455] Tong-hyung Kim, "South Korean and US forces conduct combined exercise involving B-1B bomber," *AP*, February 20, 2025, https://apnews.com/article/south-korea-us-military-north-korea-nuclear-trump-7bd9a16deaddd25221a6810ad7e5e4fa.

potential deployment of U.S. nuclear-powered submarines to the Korean Peninsula, further demonstrating a commitment to enhanced deterrence at the declaratory level.[456]

Despite Washington's efforts to reassure South Korea, calls for nuclear armament persisted. Many security experts openly advocated nuclear latency. In June 2024, Han Dong-hoon, the leader of the ruling People's Power Party, publicly supported the acquisition of enrichment and reprocessing technologies, highlighting the drawbacks of relying exclusively on alliances and argued that developing nuclear latency would provide a practical and effective security strategy without immediately triggering international sanctions.[457] In November, Han suggested the need to revise the civilian nuclear pact between South Korea and the United States to potentially allow for such capabilities.[458] Moreover, former PPP Defense Minister Kim Yong-hyun reaffirmed his stance for nuclear weapons during his confirmation process in late 2024, emphasizing that "all options" would be considered if the U.S. nuclear umbrella is deemed inadequate.[459] In the same period, South Korea's ambassador to Washington, Cho Hyun-dong, expressed intentions to persuade the U.S. to permit South Korea to build and operate facilities for reprocessing spent nuclear fuel.[460]

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[456] See 136.

[457] Lami Kim, "South Korea's Nuclear Latency Dilemma."

[458] Haye-ah Lee, "Ruling party chief suggests need to acquire nuclear enrichment, reprocessing technology," *Yonhap News Agency*, November 19, 2024, https://en.yna.co.kr/view/AEN20241119007000315.

[459] Arin Kim, "Defense minister nominee says 'options open' on Seoul getting nukes," *The Korea Herald*, August 16, 2024, https://m.koreaherald.com/article/3453692.

[460] Chan-kyong Park, "South Korea's nuclear fuel goal stirs fears of atomic weapons development," *South China Morning Post*, October 17, 2024, https://www.scmp.com/week-asia/politics/article/3282619/south-koreas-nuclear-fuel-goal-stirs-fears-atomic-weapons-development.

To advance this goal, conservative politician Yoo Yong-won launched the Mugunghwa Forum (무궁화포럼), an initiative promoting nuclear latency development at the level of the National Assembly, the South Korean Parliament.[461] You said "I hope that this forum can contribute to developing strategies and building consensus for securing South Korea's potential for nuclear armament."[462] Similarly, PPP lawmaker Na Kyung-won argued that South Korea must develop nuclear capabilities to counter North Korea's threats, warning against over-reliance on the U.S., also referencing Senator Wicker's proposal for nuclear-sharing agreements with South Korea and other allies.[463] The forum has gained support from politicians, academics, and defense experts, however, securing U.S. approval for South Korea's development of enrichment and reprocessing capabilities remains a key obstacle. Some officials have even sought to amend domestic laws that limit nuclear energy to peaceful purposes, despite simultaneously supporting potential nuclear armament.[464]

The situation in 2024 was particularly dire, since officials in the Yoon's government but also in the opposition DPK started to ask themselves what would have

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[461] Kim Arin, "National Assembly launches forum for potential nuclear armament," *The Korea Herald*, July 9, 2024, https://www.koreaherald.com/article/3431008

[462] Ibid, and 양지호 [Jiho Yang], ""핵 잠재력 확보 더 미룰 수 없어" 국회 '무궁화포럼' 발대식 ["Securing Nuclear Latency Can't Be Delayed" Opening Ceremony of National Assembly's 'Mugunghwa Forum']," *조선일보 [Chosun Ilbo]*, July 9, 2024, https://www.chosun.com/politics/diplomacydefense/2024/07/09/HAUOSDSPWFEH3I5EXYRYIGYSXA/.

[463] Roger Wicker U.S. Senator for Mississippi, "Senator Wicker Unveils Major Defense Investment Plan," [press release], May 29, 2024, https://www.wicker.senate.gov/2024/5/senator-wicker-unveils-major-defense-investment-plan.

[464] See 458.

happened to South Korea in the case of a renewed election of President Donald Trump. South Korea's ruling PPP, through Vice Minister of Unification Kim Soo-kyung, affirmed its commitment to working with any U.S. administration on North Korea.[465] PPP lawmakers endorsed Kamala Harris's criticism of Kim Jong-un, and remained wary of Trump's election effect on deterrence.[466] To prepare for the U.S. elections, the DPK formed a task force that went to Washington to take contacts with both candidates.[467] Opinions remain divided, with MPs Chung Dong-young optimistic about Trump's approach, while Wi Sung-lac warned it could sideline Seoul and increase vulnerability.[468]

This discussion occupied most of the academic and political fora, and clearly evidence that South Korea had severe security issues and doubts on the credibility of the U.S. as an ally, in the case of Trump's victory.[469] Some MPs, such as the abovementioned Yoo, also believed that the return of Donald Trump could facilitate

[465] Shery Ahn and Soohyang Choi, "South Korea Sees US by Its Side Regardless of Who is in White House," *Bloomberg*, August 26, 2024, https://www.bloomberg.com/news/articles/2024-08-25/south-korea-sees-us-by-its-side-regardless-of-who-is-in-white-house.

[466] Hyo-jin Lee, "Bold remarks by Yoon's aide on US elections reflect Trump concerns," *The Korea Times*, updated September 5, 2024, https://www.koreatimes.co.kr/www/nation/2025/02/113_381863.html.

[467] Kim Arin, "[Exclusive] Democratic Party of Korea forms US election task force," *The Korea Herald*, September 24, 2024, https://www.koreaherald.com/article/3480925.

[468] Kim Arin, "South Korean lawmakers brace for US election as Harris, Trump diverge on North Korea," *The Korea Herald*, August 25, 2024, https://m.koreaherald.com/article/3458456.

[469] See 461.

the South Korean acquisition for an indigenous nuclear deterrent, as the U.S. president would have requested for more independence and burden sharing by Seoul.[470]

At the level of academic experts, the author has recollected opinions during the second year of Yoon administration. The author participated in the 2024 Forum on ROK-US Nuclear Strategy organized by the Sejong Institute[471] in Seoul Jongno District and was able to gather specific insights by both American and South Korean professors, researchers, and academics that have worked in the field for decades. An interesting contribution by Director of Security Strategy Office at the Korea Institute for Military Affairs Kim Yeoul-soo listed five preferences for nuclear strategy according to seven criteria (normativity with the NPT, friendliness within the ROKUS plus Japan alliance, sovereignty, volatility of the alternative, balance of threats, hostility, and credibility), concluding that securing nuclear latency is the first option. This is followed directly by the development of the indigenous nuclear armament, and then by the option of re-deploying U.S. TNWs. The last option is maintaining the status quo nuclear extended deterrence.

While South Korean experts view various options along the spectrum as viable—often favoring either the development of indigenous nuclear weapons or the redeployment of U.S. tactical nuclear arms—U.S. experts largely reject both as impractical and strongly oppose them. However, a subset of American academics has shown a greater willingness to engage with South Korean concerns, reflecting a subtle shift in the overall discourse on the issue. It appears that the debate is reaching a new

[470] Kim Arin, "Push for Seoul getting own nuclear arms gains steam after Trump win," *The Korea Herald*, November 11, 2024, https://www.koreaherald.com/article/3851690.

[471] Sejong Institute, 2024 Forum on the US-ROK Nuclear Strategy, September 26, 2024, https://www.sejong.org/web/boad/22/egoread.php?bd=37&seq=11803.

form of consensus, acknowledging the possibility that one day, one or both of these options may become inevitable.

By the second half of Yoon Suk-yeol's presidency, South Korea's security landscape had undergone a profound transformation. His administration's shift toward "escalation dominance" in deterrence strategy led to heightened tensions with North Korea, culminating in Pyongyang's constitutional reclassification of the South as a hostile state. While Yoon strengthened the ROK-U.S. alliance through the Washington Declaration and the Camp David Summit, persistent doubts about the credibility of U.S. extended deterrence fueled growing support for nuclear latency and even indigenous nuclear development. Political discourse on nuclear armament, once marginal, became mainstream, with conservative lawmakers openly advocating for reprocessing and enrichment capabilities. The looming uncertainty of another Trump presidency further deepened strategic anxieties in Seoul, reinforcing the perception that South Korea could no longer afford to be complacent about its security. Ultimately, Yoon's tenure marked a critical juncture in the country's approach to deterrence, pushing the nuclear debate closer to a tipping point than ever before.

3.5 A Final Analysis and the Role of the NPT in Proliferation Choices

In synthesizing the empirical evidence across these administrations, it becomes evident that South Korea has repeatedly explored multiple pathways along the nuclear proliferation spectrum. Whether through greater deterrence integration with Washington or through unilateral steps to enhance nuclear latency, each administration has sought to hedge against perceived U.S. unreliability while contending with North Korea's relentless nuclear advancements. While Moon's administration distinguishes itself for the attempted nuclear phaseout, the policy was unsuccessful for the majority of officials, businessmen, and scientists advocating for enhanced ENR capabilities. Ultimately, these patterns reinforce the argument that the strategic calculus of a junior

ally is deeply influenced by alliance credibility issues and the persistent fear of abandonment, which, in turn, drives towards the pursuit of nuclear ambitions.

Scholars have envisioned two possible scenarios. First, South Korea develops its own indigenous nuclear arsenal. In such a case, experts have argued that a nuclear-armed South Korea would no longer require a protector to ensure its security, while others believe that it would irremediably weaken the alliance. For the U.S., a nuclear armed South Korea would cast doubts on the significance of the decades-long nonproliferation policy of the administrations in Washington, and the taboo about a 'non-nuclear Asia,' which has been pursued hitherto. Further, if South Korea goes nuclear, it could weaken the relevance of the U.S.'s extended nuclear deterrence but also increase the possibility of being entrapped in a conflict on the Peninsula. However, for South Korea it appears that the benefits of building a nuclear deterrent exceed the costs.[472]

The second scenario is that Seoul formally demands Washington the redeployment of Tactical Nuclear Weapons (TNWs) on South Korean territory. Practically, the question of redeployment requires some steps: first, study the environmental impact of redeployment, second, plan possible locations for storage facilities, third, conduct joint training on nuclear safety and security, including storage security, incident response, and recovery operations, fourth, assure South Korea-based US F-15 units and F-35 replacements for combined exercises and nuclear missions, and lastly, building storage facilities meant for redeployment.[473] Both of these scenarios are considered in isolation with respect to the other actors in Northeast Asia.

[472] Intervention at the Sejong Institute 2024 Forum on the US-ROK Nuclear Strategy, September 26, 2024, by Kyung Hee University Professor Min-Hyung Kim.

[473] Seong-whun Cheon, "The Case for Theater Nuclear Deterrence in South Korea," *Global Asia* 18, no. 1 (March 2023): 21.

North Korea has now almost reached two critical thresholds in its nuclear development, having effectively solidified its status as a nuclear armed state and demonstrating the capability to target both Seoul and Washington, drastically altering previous regional security calculus. Despite years of diplomatic efforts and deterrence measures, the situation has reached a point where the credibility of U.S. extended deterrence and South Korea's own strategic stability are deeply compromised. In this context, the recurrent changes in U.S. and South Korean administrations have only exacerbated the problem, eroding consistency in policy and undermining the credibility of both the ROK-U.S. alliance and nonproliferation commitments. The unpredictability of leadership transitions, especially with figures like Donald Trump returning to office, makes the situation even more precarious.

The long-standing policy of denuclearization of the Korean Peninsula is no longer a feasible or credible objective. The continued insistence by Washington and Seoul on denuclearization as an end goal disregards the irreversible progress North Korea has made in its nuclear arsenal, and the fact that Pyongyang has not engaged in negotiations for short-term economic relief and then withdrew without any progress in the dismantlement of its nuclear program. This has only increased in quality, number, and diverseness. Thus, the discourse surrounding complete, verifiable, and irreversible dismantlement (CVID) as the condition for engagement is now obsolete, yet it persists as a rhetorical tool rather than a practical strategy.[474]

[474] This has been a recurring assertion over the years, frequent in policy discussions and expert analyses on the subject. See Evans J.R. Revere, "Kim Jong-un will not give up North Korea's nuclear weapons," *Brookings*, April 9, 2018, https://www.brookings.edu/articles/kim-jong-un-will-not-give-up-north-koreas-nuclear-weapons/ and Alon Levkowitz, "The North Korean Nuclear Program: The End of CVID?," *BESA*, September 30, 2021, https://besacenter.org/north-korea-nuclear-program/.

The failure of denuclearization policies and rounds of negotiations necessitates a shift in approach, yet neither Washington nor Seoul has articulated a clear alternative. Moreover, there is an additional risk that the United States may engage in direct negotiations with North Korea, sidelining South Korea and prioritizing its own strategic interests, which remain fundamentally distinct. While denuclearization appears increasingly obsolete, it remains a mutually declared objective. If the U.S. were to acknowledge North Korea as a nuclear weapons state,[475] it should first consult with its South Korean counterpart before making any public declaration, as Seoul has never formally accepted such a designation.[476]

Further worsening this issue is the inherent asymmetry and unpredictability of the alliance. First, the alliance rests on fundamentally unequal premises, as has been seen with the SOFA negotiations, the Free Trade Agreement (FTA) imbalances, and the various consultative bodies on the extended deterrence posture, which underscore unbalanced dynamics between the allies. Second, the ROK-U.S. partnership remains subject to the whims of electoral politics in both countries, making it difficult to maintain a stable and coherent policy both at the bilateral level, between Seoul and Washington, and at the foreign policy level with North Korea. Trump's presidency, in particular, demonstrated how drastically U.S. policy could shift, from high-stakes summits with Kim Jong-un to threats of military action. Such unpredictability weakens Seoul's confidence in Washington's security commitments and forces South Korea to consider alternative options, including increased indigenous deterrence capabilities.

[475] Lami Kim, "Nuclear Armament Under a Troubled Democracy."

[476] Ankit Panda, "South Korea Doesn't Want North Korea Labeled as a Nuclear Power. It's Causing Friction With the United States," *Carnegie Endowment for International Peace*, January 23, 2025, https://carnegieendowment.org/emissary/2025/01/north-korea-nuclear-weapons-npt-us-denuclearization-policy?lang=en.

The alliance is both indispensable and unpredictable, presenting a paradox that South Korea has struggled to resolve—and remains unable to fully address.

Within South Korea, the nuclear debate has steadily increased and became almost 'normalized.'[477] Conservative voices have grown increasingly vocal in advocating for nuclear latency capabilities, citing the failure of past policies and the unreliability of external security guarantees, but also adding the self-burden imposition of generating more stability for the ROK-US alliance and helping Washington with an even stronger deterrent. However, it is not only conservatives who support nuclear options; progressives, while traditionally more inclined toward engagement with Pyongyang, also see value in nuclear latency and hedging, albeit for different reasons of autonomy. This bipartisan interest in nuclear capability indicates that the issue transcends party lines, making it a central topic in national security discourse.

In the midst of this debate, South Korea has sought ever-increasing reassurance from the United States, as it has been demonstrated by the analysis of the three last administrations, as it kept pushing for greater involvement in nuclear affairs. Despite all these efforts, reassurance has failed to curb South Korea's nuclear anxieties: each new security agreement, joint military exercise, and declaratory statement from Washington has only temporarily alleviated concerns, while fundamental uncertainties persisted. This has included demands for the increased deployment of U.S. strategic assets to the Korean theater, expanded nuclear-sharing mechanisms, and discussions on acquiring nuclear-powered submarines (SSNs) and tactical nuclear weapons (TNWs). More significantly, Seoul has openly debated the intent to pursue these options, even establishing a forum at the National Assembly to explore nuclear latency and indigenous deterrence. These moves reflect South Korea's escalating frustration

[477] William Gallo and Lee Juhyun, "Under Yoon, calls for South Korean nukes 'normalized'," *VOA News*, September 9, 2024, https://www.voanews.com/a/under-yoon-calls-for-south-korean-nukes-normalized/7777068.html.

with the limits of the alliance and its determination to assert greater control over its security. If Washington remains indifferent or fails to provide long-term, concrete guarantees, South Korea may ultimately decide that nuclear armament is its only viable path.

Amid these developments, the Non-Proliferation Treaty (NPT) has largely been sidelined in discussions. When mentioned, it is often treated as a secondary consideration, rather than a fundamental constraint on policy decisions. Many South Korean security experts argue that if nuclear armament becomes necessary, withdrawal from the NPT would not pose insurmountable challenges, given South Korea's right to pursue nuclear deterrence considering North Korea's existential threat. This dismissal of the NPT is deeply concerning, as it signals a shift toward normalization of proliferation discourse. The only notable voice cautioning against this trend is Professor Moon Chung-in, whose decade warnings about the consequences of proliferation remain largely unheeded.[478] The disregard for the NPT is striking, as it undermines the very foundation of the global nonproliferation regime and South Korea's long-standing international commitments.

This situation highlights an even broader reality: nonproliferation in South Korea has been maintained not by international legal frameworks, but by the ROK-US alliance itself. The NPT has played little role in constraining proliferation tendencies; rather, it has been U.S. security commitments that have prevented Seoul from taking decisive steps toward nuclear weapons up until now. If those commitments are perceived as inadequate, the NPT alone will not be sufficient to dissuade South Korea from proliferation. This should provoke swift debates among nonproliferation experts

[478] Chung-in Moon, "Going Nuclear Would Ruin South Korea's Prosperity and Prestige," *Global Asia* 18, no. 1 (March 2023): 29-33.

about the status of the most important Treaty preventing states from developing nuclear weapons for their security.

Lastly, in a much-anticipated turn, these dynamics evidence that it is imperative to rethink the concept of deterrence, and extended deterrence, itself. The traditional concept of deterrence, premised on managing escalation through threats of punishment with nuclear weapons, is no longer sufficient in a world where North Korea is a fully-fledged nuclear power and where South Korea is openly debating its own nuclear future.[479] Instead of clinging to outdated paradigms, policymakers must acknowledge the shifting realities and develop a deterrence strategy that accounts for the complexities of an evolving nuclear landscape, and that might not only refer to building and developing new nuclear devices. The time for strategic ambiguity and rhetorical assurances has passed; what is needed now is a coherent, consistent, and forward-looking approach to security on the Korean Peninsula that takes into consideration the security interests of all the players in the area, in a process that should be guided by the international nonproliferation community and not by the states themselves.

[479] Park, "The Necessity to Discuss 'Deterrence Failure'."

CONCLUSION

This dissertation has sought to answer two interrelated questions: first, why might a junior ally within an asymmetric security alliance—exemplified by South Korea under the U.S. nuclear umbrella—contemplate pursuing nuclear capabilities, and second, which proliferation options exist for such an ally. To answer these questions, the study has integrated realist theoretical approaches on alliance politics, extended deterrence credibility, and Proliferation Strategy Theory—ultimately constructing a framework that views nuclear proliferation as a spectrum of strategic choices.

The dissertation's three main chapters are built on the primary argument that decreasing alliance credibility and the fear of abandonment drive junior allies to explore a spectrum of proliferation options. In Chapter I, the literature review established the theoretical groundwork by examining classical and contemporary realist perspectives on alliances, the inherent dilemmas of commitment, abandonment, and entrapment, and the limitations of extended deterrence. Drawing on the framework developed by Vipin Narang, this chapter set up the hypothesis that a junior ally's calculations on the strategies to proliferate are not binary but span a continuum—from nuclear neutrality to latent nuclear capability and, if pushed far enough, to overt proliferation.

Chapter II traces the historical evolution of South Korea's nuclear ambitions and its contemporary approach to conventional deterrence. It begins with an analysis of Park Chung-hee's covert nuclear program in the 1970s and explains the country's

subsequent integration into the global nonproliferation regime. Via the development of a robust civilian nuclear energy sector, South Korea has however intermittently displayed episodes of non-compliance with the NPT in a tendency towards latent nuclear capabilities. Moreover, the country attempted to formalize these capabilities in the renegotiation of the 123 Agreement and further developed an aggressive conventional arsenal. The Chapter ended with the analysis on the failure of U.S. declaratory extended deterrence in South Korea, highlighting that fears persist.

Chapter III shifted the focus to the contemporary era, comparing the approaches of three South Korean successive administrations—Park Geun-hye, Moon Jae-in, and Yoon Suk-yeol—spanning a bit more than a decade, and their respective interactions with the U.S. leadership in Washington. Through comprehensive empirical evidence—including public opinion surveys, policy debates over TNWs and OPCON transfers, and diplomatic papers—the analysis demonstrates that unresolved security anxieties have driven South Korea to explore various points along the proliferation spectrum, particularly nuclear latency. Importantly, it shows that the decision to pursue nuclear capabilities is contingent not on external threats alone but more than anything on the internal dynamics of alliance credibility—a finding with significant implications for international security policy.

Broader Theoretical and Policy Implications

The theoretical framework developed in this dissertation has significant implications for both academic inquiry and international policy. The case of South Korea sheds light on a broader phenomenon: junior allies within security alliances face a fundamental dilemma when extended deterrence fails to offer reliable security guarantees. While South Korea's situation is unique due to the acute threat from North Korea, the logic underpinning its strategic calculations is applicable to other states that have confronted similar dilemmas. Historical cases—such as France's development of an independent nuclear force, Germany's integration into NATO's nuclear sharing

arrangements, and Italy's participation in nuclear burden-sharing—demonstrate that proliferation choices vary widely among allies. This variance is partly explained by the evolving nonproliferation regime, and the appearance of unprecedented risks that can undermine it, particularly within alliance frameworks.

First, this dissertation challenges the conventional wisdom that security alliances naturally deter proliferation. South Korea's experience illustrates that when extended deterrence is perceived as unreliable, the pressure for nuclear hedging intensifies. The international community must therefore reexamine the role of alliances as a primary mechanism for preventing nuclear proliferation, as these alliances may, under certain conditions, inadvertently encourage it. This argument has broader implications on the significance of the NPT regime, and its capabilities to address fundamentally changing threats.

Second, by framing proliferation as a spectrum, and not as a binary concept, this dissertation offers a nuanced understanding of proliferation behavior, which is not a question of outright nuclear arsenals and fait accomplis, but an ensemble of strategies to narrow the window of vulnerability. This spectrum model is critical for policymakers, as it suggests that measures to strengthen extended deterrence must address not only immediate threats but also the underlying structural vulnerabilities that drive a junior ally toward latent capabilities.

Third, the analysis further reveals that the NPT's normative constraints are increasingly overshadowed by practical alliance dynamics. South Korea's case shows that U.S. security commitments, rather than the treaty itself, have been the primary deterrents to proliferation. This finding underscores the urgent need for the international community to refocus its attention on the phenomenon of proliferation within alliances and to develop new frameworks that more effectively integrate alliance commitments with nonproliferation objectives.

Fourth, this dissertation relevance lies in its capacity to recenter the discussion of proliferation as a core strategic issue. As such, the insights derived from the South Korean case should inform both national and international policy debates on nonproliferation and disarmament threats in the next decades. If extended deterrence is failing to provide absolute reassurance, then the risk of proliferation, in its nuanced forms, can increase. This calls for innovative policy responses that go beyond traditional deterrence models. The broader implication of the work is that it is not granted that a junior ally within an extended deterrence framework will never pursue a nuclear arsenal, as rational deterrence theory assumes. Instead, the question becomes that of recognizing that proliferation pressures are continuously present and may only be delayed by temporary security assurances. This realization has significant policy implications. If the international community fails to address the structural vulnerabilities within alliances, the domino effect of new proliferators could fundamentally destabilize the global security order.

Given the growing instability in the global nuclear order—exemplified by the cases of Iran, North Korea, and shifting great power dynamics—there is an urgent need to establish stronger, more targeted, international nonproliferation measures. This may involve the ratification and enforcement of treaties such as the Treaty on the Prohibition of Nuclear Weapons (TPNW) and the Comprehensive Test Ban Treaty (CTBT), as well as the development of new mechanisms that better integrate the dynamics of junior allies under extended deterrence into the global nonproliferation regime. Ultimately, the case of South Korea not only enriches our understanding of nuclear proliferation within alliances but also serves as a critical warning. In a world of shifting power balances and uncertain security guarantees, the challenge of ensuring reliable extended deterrence—and preventing proliferation—demands urgent and sustained international attention. The future of global nonproliferation may well depend on the ability to adapt our frameworks to the realities of alliance politics, ensuring that the security assurances

we provide today do not inadvertently sow the seeds for tomorrow's nuclear challenges.

Fifth, the dissertation provides an empirical and theoretical example as a support for the need to fundamentally address the limitation of the concept of extended deterrence. Although experts have long been advocating for a rejuvenation of the term and its practices, it seems useful to analyze its failures in as many examples as possible. Future research should extend this framework to examine other regional contexts and alliances, exploring how different configurations of alliance credibility and domestic political pressures affect proliferation choices. It should further address whether proliferation risks posed by alliance nuclear sharing and other mechanisms by some actors with respect to others are equally considered as threats at the international level. Moreover, it should integrate a comparative approach on domestic politics, to investigate better which demographics are keener on supporting proliferation and nuclear latency. More broadly, the research could employ a holistic approach that investigates the role of the Nonproliferation Regime within changing alliance dynamics.

COMPLETE BIBLIOGRAPHY

Ahn, Jennifer. “The Evolution of South Korea's Nuclear Weapons Policy Debate.” *Council on Foreign Relations*. August 16, 2022. https://www.cfr.org/blog/evolution-south-koreas-nuclear-weapons-policy-debate.

Allison, Daniel M., Herzog, Stephen, and Ko, Jiyoung. “Under the Umbrella: Nuclear Crises, Extended Deterrence, and Public Opinion.” *Journal of Conflict Resolution* 0, no. 0 (2022): 1–31.

Asan Institute for Policy Studies. “South Koreans and Their Neighbors.” April 2023. https://en.asaninst.org/contents/south-koreans-and-their-neighbors-2023/.

Asan Institute for Policy Studies. “South Koreans and Their Neighbors.” May 2024. https://en.asaninst.org/contents/south-koreans-and-their-neighbors-2024/.

Aum, Frank, Chung-in, Moon. “Denuclearization on the Korean Peninsula. When negotiating with North Korea, absolute denuclearization should be the goal rather than a prerequisite.” *United States Institute of Peace*. December 6, 2022.

Blackwell, James A. *Cognitive Hyper-Dissonance: Nuclear Signaling Through Military Exercises*. IDA Paper NS P-11014, Institute for Defense Analyses (IDA). https://www.ida.org/-/media/feature/publications/c/co/cognitive-hyper-dissonance-nuclear-signaling-through-military-exercises/p-11014.ashx.

Botto, Kathryn. “Moon Jae-in: Putting North Korea at the Center.” In *Joint U.S.-Korea Academic Studies* 31, edited by Gilbert Rozman, 84–99. Washington, DC: Korea Economic Institute of America, 2020.

Bowers, Ian, Hiim, Henrik Stålhane. “Conventional Counterforce Dilemmas: South Korea’s Deterrence Strategy and Stability on the Korean Peninsula.” *International Security* 45, no. 3 (2021): 7–39.

Bradley, Jennifer. “Preventing the Nuclear Jungle: Extended Deterrence, Assurance, and Nonproliferation.” *Joint Force Quarterly* 112 (1st Quarter 2024): 70-75.

Brewer, Eric, Dalton, Toby, and Jones, Kelsey. “Mind the Gaps: Reading South Korea’s Emergent Proliferation Strategy.” *The Washington Quarterly* 46, no. 2 (2023): 141–160.

Castillo, Jasen J., and Downes, Alexander B. “Loyalty, Hedging, or Exit: How Weaker Alliance Partners Respond to the Rise of New Threats.” *Journal of Strategic Studies* 46, no. 2 (2023): 227–268.

Carlin, Robert L., Hecker, Siegfried S. “Is Kim Jong Un Preparing For War?” *38 North*. January 11, 2024. https://www.38north.org/2024/01/is-kim-jong-un-preparing-for-war/.

Carlson, John. “HALEU: Some Safeguards and Non-Proliferation Implications.” *Vienna Center for Disarmament and Non-Proliferation*, August 8, 2024, 1. https://vcdnp.org/wp-content/uploads/2024/09/HALEU-Some-Safeguards-Implications.pdf.

Cesa, Marco. *Alleati ma rivali. Teoria delle alleanze e politica estera settecentesca* [Allies Yet Rivals: International Politics in 18th Century Europe]. Bologna, Il Mulino, May 10, 2007.

Cha, Victor, Johnstone, Christopher B., Kim, Ellen, Szechenyi, Nicholas. “The Camp David U.S.-Japan-Korea Trilateral Summit: An Exchange among CSIS Japan and Korea Chairs.” *CSIS*. August 23, 2023, https://www.csis.org/analysis/camp-david-us-japan-korea-trilateral-summit-exchange-among-csis-japan-and-korea-chairs.

Cho, Sungmin. “South Korea’s Offensive Military Strategy and Its Dilemma.” *CSIS*. 2024. https://www.csis.org/analysis/south-koreas-offensive-military-strategy-and-its-dilemma.

Choi, Sungyeol and Hwang, Il Soon. “Nonproliferation Drivers from Civil Nuclear Power: South Korea's External Constraints and Internal Beneficiaries.” *Journal of Political & Military Sociology* 39 (2011): 85-102.

Dalnoki-Veress, Ferenc, Pomper, Miles A. “Dealing With South Korea’s Spent Fuel Challenges Without Pyroprocessing.” *Arms Control Association*. July 2, 2013. https://www.armscontrol.org/act/2013-07/features/dealing-south-koreas-spent-fuel-challenges-without-pyroprocessing.

Dalton, Toby, Karl Friedhoff, and Lami Kim. “Thinking Nuclear: South Korean Attitudes on Nuclear Weapons.” *Chicago Council on Global Affairs*. February 21, 2022. https://globalaffairs.org/sites/default/files/2022-02/Korea%20Nuclear%20Report%20PDF.pdf.

Dalton, Toby, Byun, Sunggee, Lee, Sang Tae. “South Korea Debates Nuclear Options.” *Carnegie Endowment for International Peace*. April 27, 2016. https://carnegieendowment.org/research/2016/04/south-korea-debates-nuclear-options?lang=en.

Davenport, Kelsey. “AUKUS Plans Announced.” *Arms Control Association*. April 2023. https://www.armscontrol.org/act/2023-04/news/aukus-plans-announced.

———. “North Korea Passes Nuclear Law,” Arms Control Association, October 2022, https://www.armscontrol.org/act/2022-10/news/north-korea-passes-nuclear-law.

———. “South Korea Walks Back Nuclear Weapons Comments.” *Arms Control Association*. March 2023, https://www.armscontrol.org/act/2023-03/news/south-korea-walks-back-nuclear-weapons-comments.

———. “The Six-Party Talks at a Glance.” *Arms Control Association*. 2023. https://www.armscontrol.org/factsheets/six-party-talks-glance.

———. “The U.S.-North Korean Agreed Framework at a Glance.” *Arms Control Association*. 2022. https://www.armscontrol.org/factsheets/us-north-korean-agreed-framework-glance.

Dempsey, Joseph. “South Korea’s *Hyunmoo*-5 breaks cover.” *IISS*. October 22, 2024. https://www.iiss.org/online-analysis/missile-dialogue-initiative/2024/10/south-koreas-hyunmoo-5-breaks-cover/.

Dian, Matteo. *The Evolution of the US-Japan Alliance: The Eagle and the Chrysanthemum.* Oxford: Chandos Publishing, 2014.

———. “Trump’s Mixed Signals toward North Korea and US-led Alliances in East Asia.” *The International Spectator* 53, no. 4 (2018): 1–17.

———. “Thomas Schelling: Game Theory, Deterrence and Strategic Behaviour.” In *Classic Works in International Relations*, edited by Filippo Andreatta, 55–75. Bologna: Il Mulino, 2017.

East Asia Institute. “2024 EAI Public Opinion Poll on International Affairs: Overall Perception, United States, China, North Korea.” *EAI*. October 14, 2024.

https://www.eai.or.kr/new/en/project/view.asp?board=eng_issuebriefing&intSeq=22782.

Ernst, Maximilian. “Who Taught Whom a Lesson? South Korea, the Three Nos and the Limits of Chinese Statecraft.” *CSDS*. December 2023. https://csds.vub.be/publication/who-taught-whom-a-lesson/.

Fearon, James D. “Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs.” *The Journal of Conflict Resolution* 41, no. 1 (1997): 68–90.

Fiori, Antonio, Kim, Sunhyuk. “Civil Society and Democracy in South Korea: A Reassessment.” In *Korea’s Quest for Economic Democratization*, edited by Youngmi Kim, 141-170. London: Palgrave Macmillan, 2018.

Fiori, Antonio, Milani, Marco. “Korean peninsula 2023: A year of rising tensions and political polarization.” *ASIA MAIOR* XXXIV (2024): 39-64.

Fuhrmann, Matthew. “On Extended Nuclear Deterrence.” *Diplomacy and Statecraft* 29, no. 1 (2018): 51–73.

Fuhrmann, Matthew, and Sechser, Todd S. "Signaling Alliance Commitments: Hand-Tying and Sunk Cost in Extended Nuclear Deterrence." *American Journal of Political Science* 58, no. 4 (2014): 919–935.

Fuhrmann, Matthew, and Benjamin Tkach. “Almost Nuclear: Introducing the Nuclear Latency Dataset.” *Conflict Management and Peace Science* 32, no. 4 (September 2015): 443–461.

Global Asia, “A Nuclear South Korea? Arguments, Risks, and Ways Forwards,” *Global Asia* 18, no. 1 (March 2023).

Grieco, Joseph, Ikenberry, G. John, Mastanduno, Michael. *Introduction to International Relations: Perspectives, Connections, and Enduring Questions*, 2nd ed. New York: Macmillan, 2019.

Guthe, Kurt and Scheber, Thomas. *Assuring South Korea and Japan as the Role and Number of U.S. Nuclear Weapons are Reduced*. Defense Threat Reduction Agency, Advanced Systems and Concepts Office. ASCO 2011 003. January 2011.

Haggard, Stephan. “The 123 (Dis)agreement.” *PIEE*. May 8, 2013. https://www.piie.com/blogs/north-korea-witness-transformation/123-disagreement.

Hahm, Sung Deuk, Heo, Uk. “The First Female President in South Korea: Park Geun-hye’s Leadership and South Korean Democracy.” *Journal of Asian and African Studies* 53, no. 1 (August 2017): 1-17.

Hans Morgenthau. *Politics Among Nations: The Struggle for Power and Peace.* 5th ed. New York: Alfred A. Knopf, 1978.

Hayes, Peter, Moon, Chung-in. “Park Chung Hee, the CIA, and the Bomb.” *Nautilus Institute for Security and Sustainability*. August 25, 2017. https://nautilus.org/napsnet/napsnet-special-reports/park-chung-hee-the-cia-and-the-bomb/.

Heinrichs, Rebecca L. “Nonproliferation in Great Power Competition.” *Hudson Institute*. February 24, 2025. https://www.hudson.org/arms-control-nonproliferation/nonproliferation-great-power-competition-rebeccah-heinrichs

Henry, Iain D. “What Allies Want: Reconsidering Loyalty, Reliability, and Alliance Interdependence.” *International Security* 44, no. 4 (2020): 45–83.

Herzog, Stephen. “The Nuclear Fuel Cycle and the Proliferation “Danger Zone”.” *Journal for Peace and Nuclear Disarmament* 3, 1 (2020): 60-86.

Herzog, Stephen, Sukin, Lauren. “The Dueling Nuclear Nightmares Behind the South Korean President’s Alarming Comments.” *Carnegie Endowment for International Peace*. January 25, 2023. https://carnegieendowment.org/posts/2023/01/the-dueling-nuclear-nightmares-behind-the-south-korean-presidents-alarming-comments?lang=en.

Higgins, Mike. “The AUKUS nuclear submarine deal is a challenge for the IAEA.” *Chatham House*. Last updated June 2023. https://www.chathamhouse.org/2022/08/what-are-lasting-impacts-aukus-agreement

Hong, Sung Gul. “The Search for Deterrence: Park’s Nuclear Option.” In Byung-Kook Kim and Ezra F. Vogel (eds.), *The Park Chung Hee Era: The Transformation of South Korea*. Cambridge, MA: Harvard University Press, 2011, 483-513.

Horner, Daniel. “Pyroprocessing Is Reprocessing: U.S. Official.” *Arms Control Association*. April 4, 2011. https://www.armscontrol.org/act/2011-04/pyroprocessing-reprocessing-us-official.

Howell, Edward. *North Korea and the Global Nuclear Order: When Bad Behaviour Pays.* Oxford: Oxford University Press, 2023.

Hwang, Ildo. "*Revisiting North Korea's "Two Hostile States" Doctrine: Based on the Kim Il Sung Text*," IP2024-12E (Seoul Institute of Foreign Affairs and National Security, November 6, 2024).

Hwang, Jaeho. "The ROK's China Policy under Park Geun-hye: A New Model of ROK-PRC Relations." *Brookings*. August 14, 2014. https://www.brookings.edu/articles/the-roks-china-policy-under-park-geun-hye-a-new-model-of-rok-prc-relations/.

Hymans, Jacques E. C. *The Psychology of Nuclear Proliferation: Identity, Emotions, and State Behavior*, NY: Cambridge University Press, 2006, 1-46.

ISDP. "Not a Sovereignty Issue: Understanding the Transition of Military Operational Control between the United States and South Korea." April 2021. https://www.isdp.eu/publication/not-a-sovereignty-issue-understanding-the-transition-of-military-operational-control-between-the-united-states-and-south-korea/.

Jervis, Robert. *Perception and Misperception in International Politics.* Princeton, NJ: Princeton University Press, 1976.

———. "Cooperation Under the Security Dilemma." *World Politics* 30, no. 2 (1978): 167–214.

Jervis, Robert, Yarhi-Milo, Keren, and Casler, Don. "Redefining the Debate Over Reputation and Credibility in International Security: Promises and Limits of New Scholarship." *World Politics* 73, no. 1 (2021): 167–203.

Jo, Dong-Joon, and Gartzke, Erik. "Determinants of Nuclear Weapons Proliferation." *Journal of Conflict Resolution*, 51, 1 (2007): 167-194.

Jun, Doyeong. "South Korea's Revitalized "Three-Axis" System." *Council on Foreign Relations*. January 4, 2023. https://www.cfr.org/blog/south-koreas-revitalized-three-axis-system.

Kang, Chungku. "South Korean Public Perception of Nuclear Proliferation." *The Asan Institute for Policy Studies*, April 2024. https://wapor.org/wp-content/uploads/Kang-South-Korean-Perception-of-Nuclear-Proliferation-1.pdf.

Kang, Hwan. "Korea Passing: Seoul's New Foreign Policy Concern." *Korean Economic Institute of America*. September 26, 2017. https://keia.org/the-peninsula/korea-passing-seouls-new-foreign-policy-concern/.

Kang, Jungmin. “A Nuclear South Korea Would Be a Mistake.” *Bulletin of the Atomic Scientists*. April 1, 2016. https://thebulletin.org/2016/04/a-nuclear-south-korea-would-be-a-mistake/.

Kang, Jungmin and Feiveson, H.A. “South Korea’s Shifting and Controversial Interest in Spent Fuel Reprocessing.” *Nonproliferation Review* 8, no. 1 (Spring 2001): 70-78.

Kang, Jungmin and Von Hippel, Frank. “Why joint US-South Korean research on plutonium separation raises nuclear proliferation danger.” *The Bulletin of the Atomic Scientists*. January 13, 2022. https://thebulletin.org/2022/01/why-joint-us-south-korean-research-on-plutonium-separation-raises-nuclear-proliferation-danger/.

Kelly, Robert E. “Why North Korea may use nuclear weapons first, and why current US policy toward Pyongyang is unsustainable.” *The Bulletin of the Atomic Scientists*. November 21, 2023. https://thebulletin.org/2023/11/why-north-korea-may-use-nuclear-weapons-first-and-why-current-us-policy-toward-pyongyang-is-unsustainable/.

Kelly, Robert E. and Kim, Min-hyung. “Why South Korea Should Go Nuclear: The Bomb Is the Best Way to Contain the Threat From the North.” *Foreign Affairs*. December 30, 2024. https://www.foreignaffairs.com/north-korea/why-south-korea-should-go-nuclear-kelly-kim.

Kerr, Paul. “IAEA: Seoul's Nuclear Sins in Past.” *Arms Control Association*, December 1, 2004. https://www.armscontrol.org/act/2004-12/iaea-seouls-nuclear-sins-past.

Kim, Duyeon. “Beyond the Politics of the U.S.–South Korea 123 Agreement.” *Carnegie Endowment for International Peace*. October 29, 2014. https://carnegieendowment.org/research/2014/10/beyond-the-politics-of-the-us-south-korea-123-agreement.

Kim, Jiyoon, Friedhoff, Karl. “The Fallout: South Korean Public Opinion Following North Korea’s Third Nuclear Test.” *Asan Institute for Policy Studies*. February 24, 2013. https://en.asaninst.org/contents/issue-brief-no-46-the-fallout-south-korean-public-opinion-following-north-koreas-third-nuclear-test/.

Kim, Jiyoung, Ko, Jaehan. "To Condon, Condemn, or ‘No Comment’? Explaining a Patron’s Reaction to a Client’s Unilateral Provocations." *Journal of Peace Research* 57, no. 3 (2020): 452–465.

Kim, Lami. “South Korea’s Nuclear Latency Dilemma.” *War on the Rocks*, September 19, 2024. https://warontherocks.com/2024/09/south-koreas-nuclear-latency-dilemma/.

Kim, Sang-min. “U.S. Lifts Missile Limits on South Korea.” *Arms Control Association*. June 2021. https://www.armscontrol.org/act/2021-06/news/us-lifts-missile-limits-south-korea.

Kim, Soo. “U.S.–South Korea OPCON Transition: The Element of Timing.” *RAND*. March 31, 2020. https://www.rand.org/pubs/commentary/2020/04/us-south-korea-opcon-transition-the-element-of-timing.html.

Kim, Tongfi. “Why Alliances Entangle But Seldom Entrap States.” *Security Studies* 20, no. 3 (2011): 350–377.

Kim, Tongfi, Lee, Do Young. “Continuity and changes: the effects of Russia’s war against Ukraine on Japanese and South Korean nuclear-weapons discourse.” *Nonproliferation Review* 30, no. 4-6 (2023): 265-284.

Kim, Tongfi, Simón, Luis. “A Reputation versus Prioritization Trade-Off: Unpacking Allied Perceptions of US Extended Deterrence in Distant Regions.” *Security Studies* 30, no. 5 (2021): 725–760.

Kim, Young Ho. “A World without Nuclear Weapons: A South Korean View.” *Security Challenges* 6, no. 4 (2010): 55–67.

Kimball, Daryl. “How NSG States Can Help Avert a Nonproliferation Disaster.” *Arms Control Association*. May 13, 2008. https://www.armscontrol.org/events/2008-05/nsg-states-help-avert-nonproliferation-disaster.

Kimball, Daryl, Reif, Kingston. “The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance.” *Arms Control Association*. Last reviewed July 2017. https://www.armscontrol.org/factsheets/presidential-nuclear-initiatives-pnis-tactical-nuclear-weapons-glance.

———. “The U.S. Atomic Energy Act Section 123 At a Glance.” *Arms Control Association*. September 2023. https://www.armscontrol.org/factsheets/us-atomic-energy-act-section-123-glance.

Kimball, Daryl, Bugos, Shannon. “U.S.-North Korean Agreed Framework at a Glance.” *Arms Control Association*. July 2023. https://www.armscontrol.org/factsheets/us-north-korean-agreed-framework-glance.

King, Robert R. “Jimmy Carter’s Post-Presidency Role in U.S.-North Korea Relations.” *CSIS.* Last modified July 25, 2023. https://www.csis.org/analysis/jimmy-carters-post-presidency-role-us-north-korea-relations.

Korea Institute for National Unification. “KINU's Announcement of the Result of the 2024 KINU Unification Survey: North Korea’s Two-State Claim / US Presidential Election Outlook and ROK-US Relations.” June 27, 2024. https://www.kinu.or.kr/eng/board/view.do?code=78h7R6ucKsuM&idx=24481&nav_code=eng1678858138.

Kristensen, Hans. “NATO Nuclear Exercise Underway with Czech and Polish Participation,” *Federation of American Scientists*. October 17, 2017. https://fas.org/publication/steadfast-noon-exercise/.

Kristensen, Hans M., & Norris, Robert S. “A history of US nuclear weapons in South Korea.” *Bulletin of the Atomic Scientists 73*, no. 6 (2017): 349–357.

Lacovsky, Exequiel. “A Nuclear Weapon Free Zone in Northeast Asia: Prospects and Insights from Other Regions.” *Journal for Peace and Nuclear Disarmament* 6, no. 1 (2023): 148-164.

Lanoszka, Alexander. *Atomic Assurance: The Alliance Politics of Nuclear Proliferation.* Ithaca: Cornell University Press, 2018.

Lee, Byong-chul. “Don’t be surprised when South Korea wants nuclear weapons.” *Bulletin of the Atomic Scientists*. October 23, 2019. https://thebulletin.org/2019/10/dont-be-surprised-when-south-korea-wants-nuclear-weapons/.

Lee, Dong Sun, Alexandrova, Irina. “North Korea Nuclear Strategy: Envisioning Assured Retaliation.” *International Relations of the Asia-Pacific* 21 (2021): 371–400.

Lee, Keun-sik. “The Microfoundations of Nuclear Proliferation: Evidence from South Korea.” *International Journal of Public Opinion Research* 35, no. 4 (2023).

Lee, Sangkyu, Choi, Suon, Mount, Adam, Dalton, Toby. “Nuclear for Nuclear? Understanding Divergent South Korean and American Perceptions on Deterring North Korea.” *Carnegie Endowment for International Peace*. June 27, 2024. https://carnegieendowment.org/research/2024/06/nuclear-for-nuclear-understanding-divergent-south-korean-and-american-perceptions-on-deterring-north-korea.

Lim, Eunjung. “South Korea’s Nuclear Dilemmas.” *Journal for Peace and Nuclear Disarmament* 2, no. 1 (2019): 297-318.

Makowsky, Peter, Town, Jenny, Ragnone, Iliana. “Kaesong Industrial Complex: A Tortured History and Uncertain Future.” *38 North*. September 4, 2024. https://www.38north.org/2024/09/kaesong-industrial-complex-a-tortured-history-and-uncertain-future/.

Manyin, Mark E., Nikitin, Mary Beth D., Chanlett-Avery, Emma, Rennack, Dianne E. *The February 2019 Trump-Kim Hanoi Summit*. Congressional Research Service Report IN11067, March 6, 2019, https://crsreports.congress.gov/product/pdf/IN/IN11067.

Masterson, Julia. “U.S., UK Pledge Nuclear Submarines for Australia,” *Arms Control Association*. October 2021. https://www.armscontrol.org/act/2021-10/news/us-uk-pledge-nuclear-submarines-australia.

Mazarr, Michael J. *Understanding Deterrence.* Santa Monica, CA: RAND Corporation, 2018. https://www.rand.org/pubs/perspectives/PE295.html.

Mecklin, John. “Closer than ever: It is now 89 seconds to midnight. 2025 Doomsday Clock Statement.” *Bulletin of the Atomic Scientists*. January 28, 2025, https://thebulletin.org/doomsday-clock/2025-statement/.

Mehta, Rupal N., Whitlark, Rachel E. “The Benefits and Burdens of Nuclear Latency.” *International Studies Quarterly* 61, no. 3 (2017): 517–528.

Milani, Marco, Fiori, Antonio, Dian, Matteo. *The Korean Paradox. Domestic Political Divide and Foreign Policy in South Korea*. London: Routledge, 2019.

Monteiro, Nuno P., Debs, Alexander. “The Strategic Logic of Nuclear Proliferation.” *International Security* 39, 2 (Fall 2014), 7-51.

Moon, Chung-in. “Going Nuclear Would Ruin South Korea’s Prosperity and Prestige.” Global Asia 18, no. 1 (March 2023): 29-33.

Morgenthau, Hans. *Politics Among Nations: The Struggle for Power and Peace*, 5th ed. New York: Alfred A. Knopf, 1978.

Morrow, James D. “Alliances, Credibility, and Peacetime Costs.” *Journal of Conflict Resolution* 38, no. 2 (1994): 270–297.

Narang, Vipin. *Seeking the Bomb: Strategies of Nuclear Proliferation.* Princeton: Princeton University Press, 2022.

Oswald, Rachel. “If It Wanted, South Korea Could Build Its Own Bomb.” *Pulitzer Center*. April 11, 2018. https://pulitzercenter.org/stories/if-it-wanted-south-korea-could-build-its-own-bomb.

Panda, Ankit. “A Call to Arms: Kim Jong Un and the Tactical Bomb.” *The Washington Quarterly* 44, no. 3 (2021): 7–24.

———. “South Korea Doesn’t Want North Korea Labeled as a Nuclear Power. It’s Causing Friction With the United States.” *Carnegie Endowment for International Peace*. January 23, 2025. https://carnegieendowment.org/emissary/2025/01/north-korea-nuclear-weapons-npt-us-denuclearization-policy?lang=en.

Park, Chang Kwoun, Utgoff, Victor A. “On Strengthening Extended Deterrence for the ROK-U.S. Alliance.” *Joint Force Quarterly* 68 (January 2013): 84-90.

Park, Geun-hye. “A New Kind of Korea. Building Trust Between Seoul and Pyongyang.” *Foreign Affairs*. September/October 2011. https://www.foreignaffairs.com/articles/northeast-asia/2011-09-01/new-kind-korea.

Park, Hwee-Rhak. “The Necessity to Discuss ‘Deterrence Failure’ Regarding North Korea’s Nuclear Threat.” *International Studies* 60, no. 1 (January 2023): 67-90.

Park, Ihn-hwi. “The Park Geun-hye Presidency and the Future of the U.S.-South Korea Alliance.” *Council on Foreign Relations*. March 2013. https://www.cfr.org/report/park-geun-hye-presidency-and-future-us-south-korea-alliance.

Pomper, Miles A., Pan, Yanliang. “Nuclear energy could power the AI boom-but only if the proliferation risks are minimized.” *Bulletin of the Atomic Scientists*. July 1, 2024. https://thebulletin.org/2024/07/nuclear-energy-could-power-the-ai-boom-but-only-if-proliferation-risks-are-minimized/.

Press, Daryl G. *Calculating Credibility: How Leaders Assess Military Threats*. Ithaca, NY: Cornell University Press, 2005.

Pyon, Changsop. “Strategic Patience or Back to Engagement? Obama's Dilemma on North Korea.” *North Korean Review* 7, no. 2 (FALL 2011): 73-81.

Roberts, Brad. “Preventing the Nuclear Jungle: Extended Deterrence, Assurance, and Nonproliferation.” *Strategic Forum*, no. 324 (December 2023). National Defense University Press. Accessed September 26, 2024.

Roberts, Brad (editor). *Deterring a Nuclear-Armed North Korea*. Livermore, CA: Center for Global Security Research, Lawrence Livermore National Laboratory. May 2023. https://cgsr.llnl.gov/sites/cgsr/files/2024-08/230427_CGSR_Deterring_Nuclear_Armed_North_Korea.pdf.

Roehrig, Terence. "North Korea and Reunification: The Limits of Nuclear Coercion." *Asian Survey* 60, no. 5 (2020): 859–881.

Rossiter, Ash, Heng, Yee-Kuang, Cannon, Brendon J. "Looking Under the Hood of Joint Naval Exercises: Motives and Perceived Benefits for Japan." *The Pacific Review* 38, no. 1 (2025): 147-172.

Sagan, Scott D. "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb." *International Security* 21, no. 3 (1996-1997): 54-86.

Schelling, Thomas C. *Arms and Influence.* New Haven and London: Yale University Press, 1966.

Snyder, Glenn H. "The Security Dilemma in Alliance Politics." *World Politics* 36, no. 4 (1984): 462–463.

———. *Deterrence and Defense: Toward a Theory of National Security.* Princeton, NJ: Princeton University Press, 1961.

Snyder, Scott A. "Excerpt: The US-South Korea Alliance." *Council on Foreign Relations*. 2012. https://www.cfr.org/excerpt-us-south-korea-alliance#chapter-title-0-2.

———. "How a New U.S.-South Korea Deal Can Deter the North Korean Nuclear Threat." *Council on Foreign Relations*. February 3, 2023. https://www.cfr.org/in-brief/how-new-us-south-korea-deal-can-deter-north-korean-nuclear-threat.

———. *South Korea at the Crossroads. Autonomy and Alliance in an Era of Rival Powers*. New York: Columbia University Press, 2018.

———. "The Halt of South Korea's THAAD Deployment," *Council on Foreign Relations*. June 12, 2017. https://www.cfr.org/blog/halt-south-koreas-thaad-deployment.

———. "U.S.-ROK Security Consultative Meetings: A Review of Progress Under the Obama and Lee Administrations." *Council on Foreign Relations*. October 26, 2012. https://www.cfr.org/blog/us-rok-security-consultative-meetings-review-progress-under-obama-and-lee-administrations.

Sokolsky, Richard. “The Folly of Deploying U.S. Tactical Nuclear Weapons to South Korea.” *38 North*. December 1, 2017. https://carnegieendowment.org/posts/2017/12/the-folly-of-deploying-us-tactical-nuclear-weapons-to-south-korea?lang=en.

Son, Sarah A. “South Korean National Identity and Inter-Korean Relations Since 1945.” In *Routledge Handbook of Contemporary South Korea*, edited by Sojin Lim and N.J.P. Alsford, 241–257. London: Routledge, 2021.

Squassoni, Sharon. “U.S.–South Korean Peaceful Nuclear Cooperation Agreement.” *CSIS*. October 2, 2015. https://www.csis.org/analysis/us-south-korean-peaceful-nuclear-cooperation-agreement.

Statista. “South Korean's opinion on possession of nuclear weapons of South Korea 2013-2016.” Accessed February 6, 2025. https://www.statista.com/statistics/708120/south-korea-opinion-on-nuclear-weapons-possession/.

Sukin, Lauren. “Credible Nuclear Security Commitments Can Backfire: Explaining Domestic Support for Nuclear Weapons Acquisition in South Korea.” *Journal of Conflict Resolution* 64, no. 6 (2020): 1011–1042.

Sukin, Lauren, Lanoszka, Alexander. “Credibility in Crises: How Patrons Reassure Their Allies.” *International Studies Quarterly* 68, (2024): 1-14.

Townshend, Ashley. “The AUKUS Submarine Deal Highlights a Tectonic Shift in the U.S.-Australia Alliance.” *Carnegie Endowment for International Peace*. March 27, 2023. https://carnegieendowment.org/posts/2023/03/the-aukus-submarine-deal-highlights-a-tectonic-shift-in-the-us-australia-alliance.

UC San Diego School of Global Policy and Strategy. “Strategic Stability and Extended Deterrence on the Korean Peninsula: A Conversation with Ankit Panda.” YouTube [video], 1:00:00. October 17, 2022. https://www.youtube.com/watch?v=d8x7gYvofCU.

USFK. *Mutual Defense Treaty Between the United States and the Republic of Korea*. October 1, 1953. Accessed [August 25, 2024]. https://www.usfk.mil/portals/105/documents/sofa/h_mutual%20defense%20treaty_1953.pdf.

Walt, Stephen M. “Alliance Formation and the Balance of World Power.” *International Security* 9, no. 4 (1985): 3–43.

Waltz, Kenneth N. *Theory of International Politics.* Long Grove, Illinois: Waveland Press, 1979.

Wertz, Daniel, McGrath, Matthew, LaFoy, Scott. *North Korea's Nuclear Weapons Program*. National Committee on North Korea. April 2018. Updated by Ankit Panda in August 2023. https://www.ncnk.org/resources/briefing-papers/all-briefing-papers/north-koreas-nuclear-weapons-program.

Whitlark, Rachel E., Mehta, Rupal N. "Hedging Our Bets: Why Does Nuclear Latency Matter?" *Washington Quarterly* 42, no. 1 (Spring 2019): 43.

Woolf, Amy F., Chanlett-Avery, Emma. *Redeploying U.S. Nuclear Weapons to South Korea: Background and Implications in Brief*. Congressional Research Service Report R44950. September 14, 2017. https://crsreports.congress.gov/product/pdf/R/R44950.

Xia, Liping. "VIEWPOINT: NUCLEAR-WEAPON-FREE ZONES: LESSONS FOR NONPROLIFERATION IN NORTHEAST ASIA." *Nonproliferation Review* (Fall 1999): 83-92.

Yarhi-Milo, Keren, Lanoszka, Alexander, and Cooper, Zack. "To Arm or to Ally? The Patron's Dilemma and the Strategic Logic of Arms Transfers and Alliances." *International Security* 41, no. 2 (2016): 90–139.

Yeo, Andrew. "Can South Korea Trust the United States?" *The Washington Quarterly* 46, no. 2 (2023): 109–125.

———. "Security, Sovereignty, and Justice in the U.S. Overseas Military Presence." *International Journal of Peace Studies* 19, 2 (Winter 2014): 43-67.

TREATIES AND OFFICIAL GOVERNMENT PUBLICATIONS

International Atomic Energy Agency. *GOV/2004/84: Implementation of the NPT Safeguards Agreement in the Republic of Korea*. November 11, 2004. https://www.iaea.org/sites/default/files/documents/gov2004-84.pdf.

North Atlantic Treaty Organization. *The North Atlantic Treaty*. April 4, 1949. https://www.nato.int/cps/en/natohq/official_texts_17120.htm.

North Atlantic Treaty Organization. *Overall Strategic Concept for the Defense of the North Atlantic Treaty Organization Area (MC 14/2)*. May 23, 1957. https://www.nato.int/docu/stratdoc/eng/a570523a.pdf.

Ministry of Foreign Affairs, Republic of Korea. *Audacious Initiative*. https://www.mofa.go.kr/eng/wpge/m_25501/contents.do.

Ministry of Foreign Affairs, Republic of Korea. *Joint Declaration on the Denuclearization of the Korean Peninsula (1992)*. https://www.mofa.go.kr/eng/brd/m_5476/view.do?seq=305870.

Ministry of Foreign Affairs, Republic of Korea. *Panmunjom Declaration for Peace, Prosperity and Unification of the Korean Peninsula (2018.4.27)*. September 11, 2018. https://www.mofa.go.kr/eng/brd/m_5478/view.do?seq=319130.

Ministry of Foreign Affairs, Republic of Korea. *Washington Declaration (20230426)*. April 28, 2024. https://www.mofa.go.kr/eng/brd/m_25772/view.do?seq=14&page=1.

Ministry of National Defense, Republic of Korea. *2016 Defense White Paper*. Seoul: Ministry of National Defense, 2017. https://www.mnd.go.kr/user/mndEN/upload/pblictn/PBLICTNEBOOK_201705180357180050.pdf.

Ministry of National Defense, Republic of Korea. *2018 Defense White Paper*. Seoul: Ministry of National Defense, 2019. https://www.mnd.go.kr/user/mnd/upload/pblictn/PBLICTNEBOOK_2019071105482 53080.pdf.

Ministry of National Defense, Republic of Korea. *2022 Defense White Paper*. Seoul: Ministry of National Defense, 2023. https://www.mnd.go.kr/user/mndEN/upload/pblictn/PBLICTNEBOOK_202307280406019810.pdf.

Ministry of Unification, Republic of Korea. *Unification and North Korea Policy of Yoon Suk Yeol Government*. November 21, 2022. https://unikorea.go.kr/books/archive/archive/?boardId=bbs_0000000000000043&mode=view&searchCondition=all&searchKeyword=&cntId=47381.

The Korea Times. *FULL TEXT Pyongyang Declaration*. September 9, 2018. https://www.koreatimes.co.kr/www/nation/2025/02/103_255848.html.

The White House. *Remarks by President Barack Obama in Prague as Delivered*. April 5, 2009. https://obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-prague-delivered.

The White House. *2015 United States-Republic of Korea Joint Statement on North Korea*. October 16, 2015. https://obamawhitehouse.archives.gov/the-press-office/2015/10/16/united-states-republic-korea-joint-statement-north-korea.

United Kingdom and United States of America. *Agreement for Co-operation on the Uses of Atomic Energy for Mutual Defence Purposes*. Washington, July 3, 1958. Treaty Series No. 41 (1958). https://treaties.fcdo.gov.uk/data/Library2/pdf/1958-TS0041.pdf.

United Nations Office for Disarmament Affairs. *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*. https://disarmament.unoda.org/wmd/nuclear/npt/text/.

United Nations Office for Disarmament Affairs. *Treaty on the Prohibition of Nuclear Weapons (TPNW)*. 2017. https://disarmament.unoda.org/wmd/nuclear/tpnw/.

U.S. Congress. *Atomic Energy Act of 1954, Public Law 83-703, 68 Stat. 919 (1954)*. https://www.govinfo.gov/content/pkg/COMPS-1630/pdf/COMPS-1630.pdf.

U.S. Department of Defense. *AUKUS: The Trilateral Security Partnership Between Australia, U.K. and U.S.* https://www.defense.gov/Spotlights/AUKUS/.

U.S. Department of Defense. *Defense Vision of the U.S.-ROK Alliance*. November 13, 2023. https://www.defense.gov/News/Releases/Release/Article/3586528/defense-vision-of-the-us-rok-alliance/.

U.S. Department of Defense. *Joint Communiqué. The 45th ROK-U.S. Security Consultative Meeting*. October 2, 2013. https://dod.defense.gov/Portals/1/Documents/pubs/Joint%20Communique_%2045th%20ROK-U.S.%20Security%20Consultative%20Meeting.pdf.

U.S. Department of Defense. *Joint Press Release: Extended Deterrence Strategy and Consultation Group*. https://www.defense.gov/News/Releases/Release/Article/3526956/joint-press-release-extended-deterrence-strategy-and-consultation-group/.

U.S. Department of Defense. *Joint Press Release for the ROK-U.S. Defense Ministerial Meeting*. February 23, 2024.

https://www.defense.gov/News/Releases/Release/Article/3852153/joint-press-release-for-the-rok-us-defense-ministerial-meeting/.

U.S. Department of Defense. *55th Security Consultative Meeting Joint Communique*. November 13, 2023. https://www.defense.gov/News/Releases/Release/Article/3586522/55th-security-consultative-meeting-joint-communique/.

U.S. Department of Defense. *56th Security Consultative Meeting Joint Communique*. October 30, 2024. https://www.defense.gov/News/Releases/Release/Article/3951794/56th-security-consultative-meeting-joint-communique/.

U.S. Department of Defense. *2022 National Defense Strategy, including the Nuclear Posture Review and the Missile Defense Review*. Washington, D.C.: U.S. Department of Defense, October 27, 2022. https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.pdf.

U.S. Department of Defense. *Regional Cooperation Framework for U.S.-ROK Alliance Contributions to Security in the Indo-Pacific*. October 30, 2024. https://www.defense.gov/News/Releases/Release/Article/3951831/regional-cooperation-framework-for-us-rok-alliance-contributions-to-security-in/.

U.S. Department of State. *The United States of America-Republic of Korea Nuclear Consultative Group (NCG)*. [Factsheet]. https://2021-2025.state.gov/office-of-the-spokesperson/releases/2025/01/the-united-states-of-america-republic-of-korea-nuclear-consultative-group-ncg.

U.S. Department of State. *U.S.-Republic of Korea (R.O.K.) Agreement for Peaceful Nuclear Cooperation*. https://www.state.gov/bureau-of-international-security-and-nonproliferation/releases/2025/01/u-s-republic-of-korea-r-o-k-agreement-for-peaceful-nuclear-cooperation.

U.S. Indo-Pacific Command. Joint Statement on the U.S.-ROK Nuclear Consultative Group Simulation." https://www.pacom.mil/Media/News/News-Article-View/Article/3898302/joint-statement-on-the-us-rok-nuclear-consultative-group-simulation/.

U.S. Mission Korea. *Leaders' Joint Statement in Commemoration of the 70th Anniversary of the Alliance between the U.S. and the ROK*. Embassy & Consulate in the Republic of Korea, April 27, 2023. https://kr.usembassy.gov/042723-joint-statement-in-commemoration-of-the-u-s-rok-70th-anniversary/.

United States Forces Korea. *Mutual Defense Treaty Between the United States and the Republic of Korea*, October 1, 1953.

United States Forces Korea. *Joint Communiqué of the 48th U.S.-ROK Security Consultative Meeting*. October 21, 2016. https://www.usfk.mil/Media/Newsroom/News/Article/981396/joint-communiqu-of-the-48th-us-rok-security-consultative-meeting/.

United States Forces Korea. *Special Measures Agreement*. February 2, 2014. https://www.usfk.mil/Media/Newsroom/News/Article/600787/special-measures-agreement/.